

CLASS 11 COMPUTER SCIENCE (083) PRACTICAL LIST

1. Write a C++ Program to find area & circumference of circle.
2. Write a C++ Program to display ASCII character & vice versa.
3. Write a C++ Program to find greatest of three numbers.
4. Write a C++ Program that print *Fibonacci series* using do-while.
5. Write a C++ Program to check entered number is palindrome or not using while loop.
6. Write a C++ Program that converts binary to decimal.
7. Write a C++ Program that print prime number up to n.
8. Write a C++ Program to print the following series up to n.

1

12

123

1234

12345

9. Write a C++ Program to find roots of quadratic equation using switch.
10. Write a C++ Program to find the sum of sine series

$$\sin(x) = \sum_{n=0}^{\infty} \frac{(-1)^n x^{(2n+1)}}{(2n+1)!}$$

11. Write a C++ Program that converts lowercase letters in a given string to corresponding uppercase letters & vice-versa.
12. Write a C++ Program that calculates the factorial of given number using function, A function should return a value.
13. Write a C++ Program to swap two numbers using *call by value method*.
14. Write a C++ Program to convert distances in feet or inches using *call by reference method*.
15. Write a C++ Program to find number of vowels, consonants, words, spaces, digits & special symbols in a given line of text.

CLASS 11 COMPUTER SCIENCE (083) PRACTICAL LIST

16. Write a menu driven program using function.

MAIN MENU

1. Linear Search
2. Binary Search
3. Bubble Sort
4. Largest & Smallest Number.
5. Exit

Enter your choice:

17. Write a menu driven program using function.

MAIN MENU

1. Add Matrix
2. Multiply Matrix
3. Transpose Matrix
4. Norm & Trace
5. Exit

Enter your choice:

18. Write a C++ Program to find sum of rows, columns, primary & secondary diagonal elements of a given matrix.

19. Write a C++ Program to store information of 10 employees & to display of an employee depending upon the employee no. given.

20. Write a C++ Program to make use of passing structure by value.

CHAPTER 06

GETTING STARTED WITH C++ PROGRAMS

BELLOW AVERAGE PROGRAMS:

1. Write a C++ program to display Hello .
2. Write a C++ program to display your school address.
3. Write a C++ program to display your permanent address.
4. Write a C++ program to display your details.
5. Write a C++ program to read two decimal numbers, then multiply them together and finally print out the result (in decimal)
6. Write a C++ program to find the area of a rectangle.
7. Write a C++ program to compute the area of square.
8. Write a C++ program that inputs a student's marks in three subject and prints the total and percentage marks.
9. Write a C++ program to display the following outputs using single cout statement.

Program = 20

Documentation = 23

Logic = 21

Flowchart =14

AVERAGE PROGRAMS

10. Write a C++ program to read the values of w,x,y and z and display the value of p where,
$$p = w+x / y - z$$
11. Write a C++ program to read a temperature in Celsius and displays it in Fahrenheit
12. Write a C++ program that displays on the screen
a) character 'z' b) the name "Mohan" c) the number 1977
13. Assuming there are 7.481 gallons in a cubic foot, write a program that asks the user to enter the number of gallons and then display the equivalent in cubic feet.
14. Write a C++ program that accepts the radius of a circle and print its area.
15. Write a C++ program to accept two integers and print their sum.
16. Write a C++ program to calculate the value of f where,
$$f = (a + b / c) - d$$
17. Write a C++ program to find the square of entered number.
18. Write a C++ program to find the square root of entered number.

19. Write a C++ program which adds the sales tax in the price list of items and replace the price list with the new list for 5 items.

ABOVE AVERAGE PROGRAMS

20. Write a C++ program to interchange the values of two variables.

21. Write a C++ program to interchange the values of two variables without using the third variable.

22. Write a C++ program that reads the grams and convert it into Kilograms.

23. Write a C++ program that reads centimetre and convert it into feet.

24. Write a C++ program that accepts character between 'D' to 'Z' and prints previous three characters.

25. Write a C++ program that reads a character and prints its successor and predecessor.

CHAPTER 7

PROGRAMS ON DATA HANDLING

BELLOW AVERAGE PROGRAMS

26. Write a C++ program to make use of short int data type
27. Write a C++ program to make use of long int datatype
28. Write a C++ program to make use of int data type
29. Write a C++ program to make use of signed data type
30. Write a C++ program to make use of unsigned data type
31. Write a C++ program to make use of float data type
32. Write a C++ program to make use of double data type
33. Write a C++ program to make use of long double data type
34. Write a C++ program to make use of char data type
35. Write a C++ program to make use of string data type
36. Write a C++ program to make use of constants using const keyword
37. Write a C++ program to make use of constants using #define pre-processor directive.
38. Write a C++ Program to convert a given number of days into years, weeks and days.

AVERAGE PROGRAMS

39. WAC++P to accept a character between a to j and prints next 4 characters.
40. Write a program to read a number n and find n^2, n^3, n^4 and n^5
41. Write a program to read two numbers and print their quotient and remainder.
42. Write a program to accept three digit number and print all possible combinations, if three digits are 1 , 2 and 3 then all possible combinations are 123;132;231;213;312= and 321.
43. Write a program that asks for your height in centimetres and then converts your height in to feet and inches (1 foot = 12 inches and 1 inch = 2.54 cm)
44. AN electricity board charges according to the following rates
For the first 100 units - 40 P per unit
For the next 200 units – 50 P per unit
Beyond 300 units – 60 P per unit
All users are charged meter charge also which is Rs 50=00
45. Write a program to read length in meters and convert it into kilometres,
46. Write a program to read length in meters and convert it into centimetres

47. Write a program to read length in feet and convert in to meters, centimetres and inches.

ABOVE AVERAGE PROGRAMS

48. Write a program to read a 3 digit number and print it in reverse order.

Example – given no 123 program should display 321

49. Write a program to read a 3 digit number and print its sum.

Example – entered no is 345 and program should display 12

50. Write a program to read a 3 digit number and print its subtraction.

Example – entered no is 823 and program should display 3

51. Write a program to read a 3 digit number and print its multiplication.

Example – entered no is 452 and program should display 40

52. Write a program that reads the daily sales in rupees and find out the monthly and yearly turnover of a business.

53. Write a program that reads a character and print the same.

54. Write a program to make use of the use of gets() and puts() functions.

55. Write a program to make use of getch() and putc() functions

56. Write a C++ program that illustrates setprecision() function

57. Write a C++ program that illustrates setw() function

58. Write a program that reads string and print it with its first letter in first case

For example – if input is sainik then program should produce output as Sainik

CHAPTER 8

OPERATORS AND EXPRESSIONS IN C++

BELLOW AVERAGE PROGRAMS

59. Write a C++ program that illustrates the use of different assignment statements.
60. Write a C++ program that illustrates the use of pre-increment and pre-decrement operators.
61. Write a C++ program that illustrates the use of post-increment and post-decrement operators.

AVERAGE PROGRAMS

62. Write a C++ Program that inputs experience and age of person. The salary of the person is 6000 if the person is experience and his age is more than 35, otherwise if the person is experienced and his age is more than 28 but less than the salary should be 4800 otherwise for experienced person the salary should be 2000.
63. A Computer Programming contest requires teams of 5 members each. Write a C++ program that asks for the number of players, and then gives the number of teams and number of players left over.
64. The value of e is known to be 2.71828. using this value, write a C++ program to determine the value of the expression: $2 - ye^{2y} + 4^y$. obtain the value of y from the user.
65. Write a C++ program which will raise any number x to a positive power to n. Obtain values of x and n from user.

ABOVE AVERAGE PROGRAMS

66. Write a C++ program to input principal amount and time. If time is more than 10 years, calculate the simple interest with rate 8%. Otherwise calculate it with rate 12% per annum.
67. Write a C++ program to input a number. If the number n is odd and possitie, print its square otherwise print n^3 .
68. Write a C++ program to input choice (1 or 2). If the choice is 1, print the area of circle otherwise print the perimeter of the circle. Accept the radius of circle from the user.
69. Write a C++ program to input three integers and print the largest of three.
70. Write a C++ program to input a student type ('A' or 'B'). if the student type is 'A' initialize the college account with Rs 200=00. otherwise initialize the hostel account with Rs. 200=00.
71. Write a C++ program that reads in a character from the keyboard and then display one of the following message

- i) If char is lowercase letter, the message
“The uppercase corresponding to char is”
- ii) If char is uppercase letter, the message.
“The lowercase corresponding to char is”

Hint: You will need to refer to a table of ASCII characters. Lowercase character have ASCII value range 97-122. Uppercase letters have ASCII value range 65-90.

72. Write a C++ program that illustrates the type casting.
73. Write a C++ program that illustrates the use of sizeof() operator.
74. Write a C++ program to calculate the torque

$$T = (2m \times m^2 / (m_1 + m_2)) \times g$$
75. Write a C++ program to convert the time given in minutes into hours and minutes.
76. Write a C++ program to input two values and print the modulus value in another variable.
77. Write a C++ program to enter the total no of days and find the number of months and days left.
78. Write a C++ program to read num1 and num2 and store their sum in num3 and product in num4.
79. Write a C++ program to find the maximum of two numbers using conditional operator.
80. Write a C++ program to calculate
- (i) energy = m * g * h
 - (ii) distance = u * t + ½ * a * t²
 - (iii) speed = distance / time.
81. Write a C++ program to find the perimeter of rectangle.
82. Write a C++ program to enter the marks in 3 subjects and calculate the total and assign grade if total >=200 grade is 'A' otherwise grade is 'B'.
83. Write a C++ program to find the smallest of two numbers using ternary operator.
84. Write a C++ program to find Simple Interest
85. Write a C++ program to find Compound Interest
86. Write a C++ program to swap (Interchange) two numbers without using third variable.
87. Write a C++ program to compute the square root of a number.
88. Write a C++ program to calculate the following expression

$$P + q / (r+s)^4$$

CHAPTER 9

FLOW OF CONTROL

IF ..ELSE STATEMENT PROGRAMS

BELLOW AVERAGE PROGRAMS

89. Write a C++ program that reads a value of n and check the number is zero or non zero value.
90. Write a C++ program to find a largest of two numbers.
91. Write a C++ program that reads the number and check the no is positive or negative.
92. Write a C++ program to evaluate the student performance
If % is ≥ 90 then Excellent performance
If % is ≥ 80 then Very Good performance
If % is ≥ 70 then Good performance
If % is ≥ 60 then average performance
Else Poor performance.
93. Write a C++ program to check entered character is vowel or consonant
94. Write a C++ program to find largest of three numbers
95. Write a C++ program to find smallest of three numbers

AVERAGE PROGRAMS

96. Write a C++ program that reads x and y points and find the point where it lies
97. Write a C++ program that reads three numbers and print their values in descending order. Example if a=18, b= 2 and c=13 then your program should display
18, 13, 2
98. Write a C++ program to check weather number is even or odd.
99. Write a C++ program to check a year for leap year.

ABOVE AVERAGE PROGRAMS

100. While purchasing certain items, a discount of 10% is offered if the quantity purchased is more than 1000. If quantity and price per item are input through the keyboard, write a C++ program to calculate the total expenses.

101. A certain grade of steel is graded according to the following conditions:
 - 1)Hardness must be greater than 50
 - 2)Carbon content must be less than 0.7

3) Tensile strength must be greater than 5600

The grades are as follows:

Grade is 10 if all three conditions are met

Grade is 9 if (1) and (2) are met

Grade is 8 if (2) and (3) are met

Grade is 7 if (1) and (3) are met

Grade is 6 if only one condition is met

Grade is 5 if none of the conditions is met

Write a C++ program which will require the user to give the values of hardness, carbon content and tensile strength of the steel under consideration and output the grade of the steel.

102. If cost price and selling price of an item is input through the keyboard, write a C++ program to determine whether the seller has made profit or incurred loss. Also determine how much profit he made or loss he incurred.

103. A company insures its drivers in the following cases:

- If the driver is married.
- If the driver is unmarried, male and above 30 years of age.
- If the driver is unmarried, female and above 25 years of age.

In all the other cases, the driver is not insured.

If the marital status, sex and age of the driver are the inputs,

Write a C++ program to determine whether the driver is insured or not.

104. Any character is entered through the keyboard, write a program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol.

105. The current year and the year in which the employee joined the organization are entered through the keyboard.

If the number of years for which the employee has served the organization is greater than 3 then a bonus of Rs. 2500/- is given to the employee.

If the years of service are not greater than 3, then the program should not do anything.

SWITCH STATEMENT PROGRAMS:

BELLOW AVERAGE PROGRAMS

106. Write a C++ program that reads a character from the keyboard and prints season as shown bellow.

R- Rainy season

S – Summer Season

W – Winter Season

P – Spring Season

A – Autumn Season

107. Write a C++ program to input two numbers and find their sum and difference using switch statement.

Enter the first number

Enter the second number

1 – for addition

2 – for difference

108. Write a C++ program to perform different tasks according to the user's choice

1 – for area of circle

2 – for area of rectangle

3 - for area of circumference of circle

4 – for area of square

5 - exit

109. Write a C++ program to make a simple calculator that reads two numbers and an operator using switch statement.

AVERAGE PROGRAMS

110. Write a C++ program to calculate the grade of an employee with following condition using switch statement

| Starting Basic | Grade |
|-----------------------|--------------|
| 1240 | D |
| 1440 | C |
| 1840 | B |
| 2240 | A |

111. Write a C++ program to find the ticket fair of bus according to the code of a bus

| Code | Fair |
|-------------|-------------|
| D | Rs. 4 |
| R | Rs 5 |
| W | Rs 10 |
| C | Rs 12 |

112. In a company an employee is paid as follows,

| | <u>Salary</u> | <u>DA</u> | <u>HRA</u> |
|------|---|-----------|------------|
| i) | Less than 2000 | 10% | 5% |
| ii) | greater than or equal to 2000 but less than 4000 | 25% | 15% |
| iii) | greater than or equal to 4000 but less than 8000 | 30% | 25% |
| iv) | greater than or equal to 8000 | 40% | 30% |

Write a C++ program to find the net salary of an employee.

113. Write a C++ program that reads weekday (1-7) in number and print the day

ABOVE AVERAGE PROGRAMS

114. Write a C++ program to find roots of quadratic equation using switch.

115. Write a C++ program to check entered character is vowel or consonant using switch statement.

116. Write a short program to input a digit and print it in words

WHILE STATEMENT PROGRAMS :

BELLOW AVERAGE PROGRAMS

117. Write a C++ program to print the natural numbers up to n

118. Write a C++ program to print even numbers up to n

119. Write a C++ program to print odd numbers up to n

120. Write a C++ program to print sum of natural numbers up to n

121. Write a C++ program to print sum of odd numbers up to n

122. Write a C++ program to print sum of even numbers up to n

123. Write a C++ program to print natural numbers up to n in reverse order.

AVERAGE PROGRAMS

124. Write a C++ program to print Fibonacci series up to n

125. Write a C++ program find a factorial of given number

126. Write a C++ program to check the entered number is prime or not

127. Write a C++ program to find the sum of digits of given number

128. Write a C++ program to check the entered number is palindrome or not

129. Write a C++ program to reverse the given number.

130. Write a C++ program to print the multiplication table
131. Write a C++ program to print the largest of n numbers
132. Write a C++ program to print smallest of n numbers

ABOVE AVERAGE PROGRAMS

133. Write a C++ program generate Armstrong numbers up to specific limit

Hint : *A Number is Armstrong if it equals to the sum of cubes of its digits for example,*
 $153 = 1^3 + 5^3 + 3^3$

134. Write a C++ program to print prime numbers up to specific limit.
135. Write a C++ program to check a given number for Fibonacci term.
136. Write a C++ program to check a number for perfect number

Hint : A number is perfect if it equals the sum of its proper divisors i.e., the divisors excluding the number itself. For example $28 = 1 + 2 + 4 + 7 + 14$

137. Write a C++ program to find the number of vowels, consonants, digits and other characters in a given string.
138. Write a C++ program to find second maximum number between n numbers.
139. Write a C++ program to convert decimal number to binary number.
140. Write a C++ program to compute the LCM and GCD of two positive integers.
141. Write a C++ program count the number of occurrences of positive numbers, negative numbers and zeros in a stream of data terminated by some specific character.
142. Write a C++ program to print table of given number.
143. Write a C++ program that prints 1 2 4 8 16 32
144. Write a C++ program to generate divisors of an integer
145. Write a C++ program to print sum of negative numbers, sum of positive even numbers, sum of positive odd numbers from a list of numbers entered by the user. The list terminates when the number is entered zero.

DO- WHILE STATEMENT PROGRAMS :

BELLOW AVERAGE PROGRAMS

146. Write a C++ program to print the natural numbers up to n
147. Write a C++ program to print even numbers up to n
148. Write a C++ program to print odd numbers up to n
149. Write a C++ program to print sum of natural numbers up to n
150. Write a C++ program to print sum of odd numbers up to n

151. Write a C++ program to print sum of even numbers up to n
152. Write a C++ program to print natural numbers up to n in reverse order.

AVERAGE PROGRAMS

153. Write a C++ program to print Fibonacci series up to n
154. Write a C++ program find a factorial of given number
155. Write a C++ program to check the entered number is prime or not
156. Write a C++ program to find the sum of digits of given number
157. Write a C++ program to check the entered number is palindrome or not
158. Write a C++ program to reverse the given number.
159. Write a C++ program to print the multiplication table
160. Write a C++ program to print the largest of n numbers
161. Write a C++ program to print smallest of n numbers

ABOVE AVERAGE PROGRAMS

162. Write a C++ program generate Armstrong numbers up to specific limit

Hint : A Number is Armstrong if it equals to the sum of cubes of its digits for example,

$$153 = 1^3 + 5^3 + 3^3$$

163. Write a C++ program to print prime numbers up to specific limit.
 164. Write a C++ program to check a given number for Fibonacci term.

 165. Write a C++ program to check a number for perfect number
- Hint :** A number is perfect if it equals the sum of its proper divisors i.e., the divisors excluding the number itself. For example $28 = 1 + 2 + 4 + 7 + 14$
166. Write a C++ program to find the number of vowels, consonants, digits and other characters in a given string.
 167. Write a C++ program to find second maximum number between n numbers.
 168. Write a C++ program to convert decimal number to binary number.
 169. Write a C++ program to compute the LCM and GCD of two positive integers.
 170. Write a C++ program count the number of occurrences of positive numbers, negative numbers and zeros in a stream of data terminated by some specific character.
 171. Write a C++ program to print table of given number.
 172. Write a C++ program that prints 1 2 4 8 16 32
 173. Write a C++ program to generate divisors of an integer

174. Write a C++ program to print sum of negative numbers, sum of positive even numbers, sum of positive odd numbers from a list of numbers entered by the user. The list terminates when the number is entered zero.

175. Write a C++ program to print every integer between 1 and n divisible by m. also report weather the number that is divisible by m is even or odd.

FOR & NESTED FOR STATEMENT PROGRAMS

BELLOW AVERAGE PROGRAMS

176. Write a C++ program to print the natural numbers up to n

177. Write a C++ program to print even numbers up to n

178. Write a C++ program to print odd numbers up to n

179. Write a C++ program that prints

1 2 4 8 16 32 ... n^2

180. Write a C++ program to sum the given sequence

$1 + 1/1! + 1/2! + 1/3! + \dots + 1/n!$

AVERAGE PROGRAMS

181. Write a C++ program to compute the cosine series

$\cos(x) = 1 - x^2 / 2! + x^4 / 4! - x^6 / 6! + \dots x^n / n!$

182. Write a short C++ program to check weather the square root of number is prime or not.

183. Write a C++ program to produce following design

A B C D E

A B C D E

A B C D E

A B C D E

A B C D E

If user enters n value as 5

184. Write a C++ program to fill the entire screen with a smiling face.

ABOVE AVERAGE PROGRAMS

185. Write a C++ program to produce following design

```
A
A B
A B C
A B C D
A B C D E
```

If user enters n value as 5

186. Write a C++ program to produce following design

```
ABCDE
A B C D
A B C
A B
A
```

(If user enters n value as 5)

187. Write a C++ program to produce following design

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

If user enters n value as 5

188. Write a C++ program to produce following design

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

If user enters n value as 5

189. Write a C++ program to produce following design

```
*
* *
* * *
* * * *
```

* * * * *

If user enters n value as 5

190. Write a C++ program to produce following design

```
5 5 5 5 5
4 4 4 4
3 3 3
2 2
1
```

If user enters n value as 5

191. Write a C++ program to produce following design

```
* * * * *
* * * *
* * *
* *
*
```

If user enters n value as 5

192. Write a C++ program to produce following design

```
*
* * *
* * * * *
* * * * * * *
```

193. Write a C++ program to produce following design

```
& & & & &
& & &
&
```

194. Write a C++ program to produce following design

```
      &
     &   &
    &       &
   &   &   &   &
  &   &   &   &   &
```

195. Write a C++ program to produce following design

```

      *
     **
    ***
   ****
  *****

```

196. Write a C++ program to produce following design

```

      *
     ***
    *****
   *****
  *****
 *

```

197. Write a C++ program to produce following design

```

5 5 5 5 5 5 5 5 5
4 4 4 4   4 4 4 4
3 3 3     3 3 3
2 2       2 2
1         1

```

198. Write a C++ program to produce following design

```

      1
     2 3 2
    3 4 5 4
   4 5 6 7 6 5 4
  5 6 7 8 9 8 7 6 5

```

199. Write a C++ program to produce following design

```

      1
     1 2 1
    1 2 3 2 1
   1 2 3 4 3 2 1
  1 2 3 4 5 4 3 2 1

```

200. Write a C++ program to produce following design

ZYXWVWXYZ

ZYXWXYZ

ZYXYZ

ZYZ

Z

CHAPTER 10

STANDARD LIBRARY FUNCTIONS

BELLOW AVERAGE PROGRAMS

201. Write a C++ program that illustrates the `isalnum()` function
202. Write a C++ program that illustrates the `isalpha()` function
203. Write a C++ program that illustrates `isdigit()` function
204. Write a C++ program that illustrates `islower()` function
205. Write a C++ program that illustrates `isupper()` function
206. Write a C++ program that illustrates `toupper()` function
207. Write a C++ program that illustrates `tolower()` function
208. Write a C++ program that illustrates `strcat()` function
209. Write a C++ program that illustrates `strcmp()` function
210. Write a C++ program that illustrates `strcmpi()` function
211. Write a C++ program that illustrates `strlen()` function
212. Write a C++ program that illustrates `rand()` function
213. Write a C++ program that illustrates `random()` function
214. Write a C++ program that illustrates `randomize()` function
215. Write a C++ program that illustrates the use of `pow()` function
216. Write a C++ program that illustrates the use of `sqrt()` function
217. Write a C++ program that illustrates the use of `abs()` function
218. Write a C++ program that illustrates the use of `ceil()` function
219. Write a C++ program that illustrates the use of `floor()` function
220. Write a C++ program that illustrates the use of `exp()` function
221. Write a C++ program that illustrates the use of `log()` function
222. Write a C++ program that illustrates the use of `log10()` function
223. Write a C++ program that illustrates the use of `sin()` function
224. Write a C++ program that illustrates the use of `cos()` function
225. Write a C++ program that illustrates the use of `tan()` function
226. Write a C++ program that illustrates the use of `fmod()` function
227. Write a C++ program that illustrates the use of `atoi()` function
228. Write a C++ program that illustrates the use of `atol()` function
229. Write a C++ program that illustrates the use of `itoa()` function
230. Write a C++ program that illustrates the use of `ltoa()` function
231. Write a C++ program that illustrates the use of `atof()` function

AVERAGE PROGRAMS

232. Write a C++ program that checks whether the given character is alphanumeric or a digit
233. Write a C++ program that checks whether a given character is alphabet or not. If it is an alphabet whether it is lowercase or uppercase character.
234. Write a C++ program that reads string and converts it into uppercase
235. Write a C++ program that reads two strings and appends the first string to the second for example the first string is **Good** and second string is **Morning** the program should print **MorningGood**
236. Write a C++ program that reads a password and prints “**OK**” if the correct password is entered otherwise print “**SORRY!**” the user should be given three chances.

ABOVE AVERAGE PROGRAMS

237. Write a C++ program that reads two strings and copies the smaller string into the higher string.
238. Write a C++ program that converts lowercase letters in a given string to corresponding uppercase letters and vice versa.
239. Write a C++ program to find the length of given string without using `strlen()` function
240. Write a C++ program to concatenate given two strings without using `strcat()` function
241. Write a C++ program to find the total number of alphabets in a given line of text
242. Write a C++ program to find the total number of uppercase, lower case, digits in given line of text
243. Write a C++ program to find the total number of vowels and consonants in given line of text.
244. Write a C++ program to find the total number of words in given line of text
245. Write a C++ program to find the total number spaces given line to text
246. Write a C++ program to reverse a given line of text
247. Write a C++ program to arrange the given line of text in ascending order
248. Write a C++ program to arrange the given line of text in descending order
249. Computers are playing an important role in education. Write a C++ program that will help elementary school students to learn multiplication. Use random function to produce two positive one-digit number. It should then type a question such as:
How much is 6 times 7?

The student then types the answer. Your program checks the student's answer. If it is correct print "**Very Good !**" then ask another multiplication question. If the answer is wrong, print "**No, Please try again.**" And then let the student try the same question again repeatedly until the student finally gets it right.

250. Write a C++ program that reads first name, middle name and last name and produce an output where first letter of each name is capitalised.

CHAPTER 11

USER DEFINED FUNCTIONS

CALL BY VALUE METHOD WITH FUNCTION RETURN - PROGRAMS

BELLOW AVERAGE PROGRAMS

251. Write a C++ program to find the area of a rectangle.
252. Write a C++ program to compute the area of square.
253. Assuming there are 7.481 gallons in a cubic foot, write a program that asks the user to enter the number of gallons and then display the equivalent in cubic feet.
254. Write a C++ program that accepts the radius of a circle and print its area.
255. Write function to find a factorial of given number using call by value method with function return.
256. Write a function find a sum of two given number using call by value method with function return.
257. Write a C++ program that invokes a function calc () which intakes two integers and an arithmetic operator and print the corresponding result using call by value method with function return.

AVERAGE PROGRAMS

258. Write a function to find a square root of given number using call by value method with function return.
259. Write a function to calculate sum of natural numbers up to n using call by value method with function return
260. Write a function to find a least common divisor of two numbers using call by value method with function return.
261. Write a function to calculate a length of given string using call by value method with function return
262. Write a function to swap 2 values using call by value method with function return

ABOVE AVERAGE PROGRAMS

263. Write a function to check given string is palindrome or not using call by value method with function return
264. Write a function to calculate total number of spaces string using call by value method with function return
265. Write a function to calculate total number of spaces string using call by value method with function return
266. Write a function to reverse a given number using call by value method with function return
267. Write a function to calculate sum of digits of given number using call by value method with function return

CALL BY VALUE METHOD WITH FUNCTION NON RETURN (VOID FUNCTIONS)- PROGRAMS

BELLOW AVERAGE PROGRAMS

268. Write a C++ program to find the area of a rectangle using call by value method with function non return (void function).
269. Write a C++ program to compute the area of square using call by value method with function non return (void function).
270. Assuming there are 7.481 gallons in a cubic foot, write a function that asks the user to enter the number of gallons and then display the equivalent in cubic feet using call by value method with function non return (void function).
271. Write a C++ program that accepts the radius of a circle and print its area using call by value method with function non return (void function).
272. Write function to find a factorial of given number using call by value method with function non return (void function).
273. Write a function find a sum of two given number using call by value method with function non return (void function).
274. Write a C++ program that invokes a function calc () which intakes two integers and an arithmetic operator and print the corresponding result using call by value method with function non return (void function).

AVERAGE PROGRAMS

275. Write a function to find a square root of given number using call by value method with function non return (void function).
276. Write a function to calculate sum of natural numbers up to n using call by value method with function non return (void function)
277. Write a function to find a least common divisor of two numbers using call by value method with function non return (void function).
278. Write a function to calculate a length of given string using call by value method with function non return (void function)

ABOVE AVERAGE PROGRAMS

279. Write a function to check given string is palindrome or not using call by value method with function non return (void function)
280. Write a function to calculate total number of spaces string using call by value method with function non return (void function)
281. Write a function to calculate total number of spaces string using call by value method with function non return (void function)
282. Write a function to reverse a given number using call by value method with function non return (void function)
283. Write a function to calculate sum of digits of given number using call by value method with function non return (void function)

DEFAULT ARGUMENTS

284. Write a C++ program to find the area of a rectangle using call by value method with default arguments.
285. Write a C++ program to compute the area of square using call by value method with default arguments..
286. Assuming there are 7.481 gallons in a cubic foot, write a function that asks the user to enter the number of gallons and then display the equivalent in cubic feet using call by value method with default arguments..
287. Write a C++ program that accepts the radius of a circle and print its area using call by value method with default arguments..
288. Write function to find a factorial of given number using call by value method with default arguments..
289. Write a function find a sum of two given number using call by value method with default arguments.

290. Write a C++ program that invokes a function `calc ()` which intakes two integers and an arithmetic operator and print the corresponding result using call by value method with default arguments.

AVERAGE PROGRAMS

291. Write a function to find a square root of given number using call by value method with default arguments.

292. Write a function to calculate sum of natural numbers up to `n` using call by value method with default arguments.

293. Write a function to find a least common divisor of two numbers using call by value method with default arguments.

294. Write a function to calculate a length of given string using call by value method with default arguments.

ABOVE AVERAGE PROGRAMS

295. Write a function to check given string is palindrome or not using call by value method with default arguments.

296. Write a function to calculate total number of spaces string using call by value method with default arguments.

297. Write a function to calculate total number of spaces string using call by value method with default arguments.

298. Write a function to reverse a given number using call by value method with default arguments.

299. Write a function to calculate sum of digits of given number using call by value method with default arguments.

CONSTANT ARGUMENTS

300. Write a C++ program to find the area of a rectangle using call by value method with constant arguments.

301. Write a C++ program to compute the area of square using call by value method with constant arguments..
302. Assuming there are 7.481 gallons in a cubic foot, write a function that asks the user to enter the number of gallons and then display the equivalent in cubic feet using call by value method with constant arguments..
303. Write a C++ program that accepts the radius of a circle and print its area using call by value method with constant arguments..
304. Write function to find a factorial of given number using call by value method with constant arguments.
305. Write a function find a sum of two given number using call by value method with constant arguments.
306. Write a C++ program that invokes a function calc () which intakes two integers and an arithmetic operator and print the corresponding result using call by value method with constant arguments.

AVERAGE PROGRAMS

307. Write a function to find a square root of given number using call by value method with constant arguments.
308. Write a function to calculate sum of natural numbers up to n using call by value method with constant arguments.
309. Write a function to find a least common divisor of two numbers using call by value method with constant arguments.
310. Write a function to calculate a length of given string using call by value method with constant arguments.

ABOVE AVERAGE PROGRAMS

311. Write a function to check given string is palindrome or not using call by value method with constant arguments.
312. Write a function to calculate total number of spaces string using call by value method with constant arguments.
313. Write a function to calculate total number of spaces string using call by value method with constant arguments.
314. Write a function to reverse a given number using call by value method with constant arguments.

315. Write a function to calculate sum of digits of given number using call by value method with constant arguments.

CALL BY REFERENC METHOD WITH FUNCTION RETURN - PROGRAMS

BELLOW AVERAGE PROGRAMS

316. Write a function to find the area of a rectangle using call by reference method with function return.

317. Write a function to compute the area of square using call by reference method with function return.

318. Assuming there are 7.481 gallons in a cubic foot, write a function that asks the user to enter the number of gallons and then display the equivalent in cubic feet using call by reference method with function return

319. Write a function that accepts the radius of a circle and print its area using call by reference method with function return

320. Write function to find a factorial of given number using call by reference method with function return.

321. Write a function find a sum of two given number using call by reference method with function return.

322. Write a C++ program that invokes a function calc () which intakes two integers and an arithmetic operator and print the corresponding result using call by reference method with function return.

AVERAGE PROGRAMS

323. Write a function to find a square root of given number using call by reference method with function return.

324. Write a function to calculate sum of natural numbers up to n using call by reference method with function return

325. Write a function to find a least common divisor of two numbers using call by reference method with function return.

326. Write a function to calculate a length of given string using call by reference method with function return

ABOVE AVERAGE PROGRAMS

327. Write a function to check given string is palindrome or not using call by reference method with function return
328. Write a function to calculate total number of spaces string using call by reference method with function return
329. Write a function to calculate total number of spaces string using call by reference method with function return
330. Write a function to reverse a given number using call by reference method with function return
331. Write a function to calculate sum of digits of given number using call by reference method with function return

**CALL BY REFERENC METHOD WITH FUNCTION NON RETURN (VOID FUNCTIONS) -
PROGRAMS**

BELLOW AVERAGE PROGRAMS

332. Write a C++ program to find the area of a rectangle using call by reference method with function non return (void function).
333. Write a C++ program to compute the area of square using call by reference method with function non return (void function).
334. Assuming there are 7.481 gallons in a cubic foot, write a function that asks the user to enter the number of gallons and then display the equivalent in cubic feet using call by reference method with function non return (void function).
335. Write a C++ program that accepts the radius of a circle and print its area using call by reference method with function non return (void function).
336. Write function to find a factorial of given number using call by reference method with function non return (void function).
337. Write a function find a sum of two given number using call by reference method with function non return (void function).
338. Write a C++ program that invokes a function calc () which intakes two integers and an arithmetic operator and print the corresponding result using call by reference method with function non return (void function).

AVERAGE PROGRAMS

339. Write a function to find a square root of given number using call by reference method with function non return (void function).
340. Write a function to calculate sum of natural numbers up to n using call by reference method with function non return (void function)
341. Write a function to find a least common divisor of two numbers using call by reference method with function non return (void function).
342. Write a function to calculate a length of given string using call by reference method with function non return (void function)

ABOVE AVERAGE PROGRAMS

343. Write a function to check given string is palindrome or not using call by reference method with function non return (void function)
344. Write a function to calculate total number of spaces string using call by reference method with function non return (void function)
345. Write a function to calculate total number of spaces string using call by reference method with function non return (void function)
346. Write a function to reverse a given number using call by reference method with function non return (void function)
347. Write a function to calculate sum of digits of given number using call by reference method with function non return (void function)

CHAPTER 12

STRUCTURED DATA TYPE - ARRAY

PROGRAMS ON ONE DIMENSIONAL ARRAYS

BELLOW AVERAGE PROGRAMS

348. Write a C++ program to enter 5 integer values and print their sum
349. Write a C++ program to read marks of 50 students and store them in array
350. Write a C++ program to read prices of 20 items in an array and then display sum of all the prices, product of all the prices and average of them.
351. Write a C++ program to accept the sales of each day of the month and print the total sales and average sales of the month.
352. Write a C++ program that doubles every element of vector (array).
353. Write a C++ program to perform the following tasks
- Read an array of 10 integers
 - Multiply each element of array by 5
 - Display the new array

AVERAGE PROGRAMS

354. Write a C++ program to count the number of employees earning more than Rs. 1 lakh per annum. The monthly salaries of 100 employees are given.
355. An array EMP[20] contains the number of employees joined in different years. Write a short program to find the number of years in which no employee joined.
356. Write a C++ program to find the largest and smallest elements in a vector (array)
357. Write a C++ program to reverse a vector (array) using temporary variable.

ABOVE AVERAGE PROGRAMS

358. Write a C++ program to delete duplicate element from a vector.
359. Write a C++ program to reverse a vector (array) without using temporary variable.
360. Suppose A,B and C are arrays of integers m, n and m+n respectively, Write a C++ program to produce third array C, containing all the data of array A and B.
361. Write a program that reads array elements and count the total number of positive and negative elements in vector (array)

- 362. Write a C++ program to search an element in a vector and also print its position
- 363. Write a C++ program to sort elements of vector in ascending order.
- 364. Write a C++ program to sort elements of vector in descending order.
- 365. Write a C++ program to find the second maximum element in a vector.
- 366. Write a C++ program that finds frequency of all characters in given line of text.
- 367. Write a C++ program to cycle a string frequency

for example : given string is : computer then program should produce the following

```

computer
rcompute
ercomput
tercompu
utercomp
putercom
mputerco
omputerc

```

- 368. Write a C++ program to search an element in vector using binary search method.
- 369. Write a C++ program to read an array elements and multiply with 3 if element of an array is divisor of 7 otherwise multiply with 2.

PROGRAMS ON TWO DIMENSIONAL ARRAYS USING FUNCTIONS

BELOW AVERAGE PROGRAMS

- 370. Write a C++ program that illustrates 2D array using function
- 371. Write a C++ program that calculates sum of all the elements of 2D array using function
- 372. Write a C++ program that calculates sum of all the squares of elements of 2D array using function
- 373. Write a C++ program to count the elements whose value is 0 (zero) of 2D array using function
- 374. Write a C++ program to count the non-zero elements of 2D array using function

AVERAGE PROGRAMS

- 375. Write a C++ program that adds two matrix using function

376. Write a C++ program that subtracts 2 matrix using function
377. Write a C++ program to find the product of matrix using function

ABOVE AVERAGE PROGRAMS

378. Write a C++ program to find the row sum and column sum of given matrix using function
379. Write a C++ program to find the sum of primary diagonal elements of given matrix using function
380. Write a C++ program to find the sum of secondary diagonal elements of given matrix using function
381. Write a C++ program that prints all the elements of a matrix that are not diagonal using function
382. Write a C++ program to check 2 matrices are equal or not using function
383. Write a C++ program that stores all the elements of 2D array in 1D array using function
384. Write a C++ program to find the transpose of given matrix using function
385. Write a C++ program to print the first row and last row of given matrix using function
386. Write a C++ program to print the first column and last column of given matrix using function
387. Write a C++ program to sort list of names in ascending order using function
388. Write a C++ program to sort a list of numbers in descending order using function

ARRAYS PROGRAMS USING FUNCTIONS

BELLOW AVERAGE PROGRAMS

389. Write a C++ program to enter 5 integer values and print their sum using function
390. Write a C++ program to read marks of 50 students and store them in array using function
391. Write a C++ program to read prices of 20 items in an array and then display sum of all the prices, product of all the prices and average of them using function
392. Write a C++ program to accept the sales of each day of the month and print the total sales and average sales of the month using function
393. Write a C++ program that doubles every element of vector (array) using function
394. Write a C++ program to perform the following tasks using functions
- Read an array of 10 integers

- Multiply each element of array by 5
- Display the new array

AVERAGE PROGRAMS

395. Write a C++ program to count the number of employees earning more than Rs. 1 lakh per annum. The monthly salaries of 100 employees are given using function
396. An array EMP[20] contains the number of employees joined in different years. Write a short program to find the number of years in which no employee joined using function
397. Write a C++ program to find the largest and smallest elements in a vector (array) using function
398. Write a C++ program to reverse a vector (array) using temporary variable using function

ABOVE AVERAGE PROGRAMS

399. Write a C++ program to delete duplicate element from a vector using function
400. Write a C++ program to reverse a vector (array) without using temporary variable using function
401. Suppose A,B and C are arrays of integers m, n and m+n respectively, Write a C++ program to produce third array C, containing all the data of array A and B using function
402. Write a program that reads array elements and count the total number of positive and negative elements in vector (array) using function
403. Write a C++ program to search an element in a vector and also print its position using function
404. Write a C++ program to sort elements of vector in ascending order using function
405. Write a C++ program to sort elements of vector in descending order using function
406. Write a C++ program to find the second maximum element in a vector using function
407. Write a C++ program that finds frequency of all characters in given line of text using function
408. Write a C++ program to cycle a string frequency using function
- for example : given string is : computer then program should produce the following

```

computer
rcompute
ercomput
tercompu
utercomp
putercom

```

mputerco

omputerc

409. Write a C++ program to search an element in vector using binary search method using function
410. Write a C++ program to read an array elements and multiply with 3 if element of an array is divisor of 7 otherwise multiply with 2 using function
411. Write a C++ program that reads two strings and copies the smaller string into the higher string.
412. Write a C++ program that converts lowercase letters in a given string to corresponding uppercase letters and vice versa.
413. Write a C++ program to find the length of given string without using `strlen()` function
414. Write a C++ program to concatenate given two strings without using `strcat()` function
415. Write a C++ program to find the total number of alphabets in a given line of text
416. Write a C++ program to find the total number of uppercase, lower case, digits in given line of text
417. Write a C++ program to find the total number of vowels and consonants in given line of text.
418. Write a C++ program to find the total number of words in given line of text
419. Write a C++ program to find the total number spaces given line to text
420. Write a C++ program to reverse a given line of text
421. Write a C++ program to arrange the given line of text in ascending order
422. Write a C++ program to arrange the given line of text in descending order
423. Write a function in C++ which accepts an integer array and its size as arguments and change all the even number with twice and odd with thrice.
424. Write a function in C++ to return the element which is present maximum number of times in an array . the function prototype is given below.

`int MAX(int arr[], int size)`

e.g : If the array is 2 4 2 4 2 4 2 4 2 4 2 2 4 then the function will return a value 2

425. Write a C++ function `RevDup(int [], int)` to remove the duplicate occurrence of the value Present in an integer array, passed to the function as a parameter.

For e.g. If array initially is `X[] = { 1,1,1,7,5,2,2,6}`

After removing duplicate values the array will be $X \{ \} = \{1, 7, 5, 2, 6\}$

426. Write a function in C++ which accepts an integer array and its size as parameters and rearrange the array in reverse. Example : if an array of nine elements initially contains the elements as

4, 2,5,1,6,7,8,12,10

then the function should rearrange the array as 10,12,8,7,6,1,5,2,4

427. Write a function in C++ which accepts an integer array and its size as arguments/ parameters and exchange the values of first half side elements with the second half side elements of the array.

Ex:- If an array of eight elements has initial content as

2,4,1,6,7,9,23,10

The function should rearrange the array as

7,9,23,10,2,4,1,6

428. Write an user defined Sumup(int [][]) to display sum of upper half elements of a square matrix. The function will return the sum of the values.

429. Write a function in C++ to find sum of rows from a two dimensional array.

430. Define a function SWAPCOL() in c++ to swap (interchange) the first column elements with the last column elements , for a two dimensional integer array passed as the argument of the function.

Example : If the two dimensional array contains

| | | | |
|---|---|---|---|
| 2 | 1 | 4 | 9 |
| 1 | 3 | 7 | 7 |

| | | | |
|---|---|---|---|
| 5 | 8 | 6 | 3 |
| 7 | 2 | 1 | 2 |

After swapping of the content of 1st column and last column, it should be:

| | | | |
|---|---|---|---|
| 9 | 1 | 4 | 2 |
| 7 | 3 | 7 | 1 |
| 3 | 8 | 6 | 5 |
| 2 | 2 | 1 | 7 |

431. Write a function in C++ to print the sum of all the values which are either divisible by 2 or are divisible by 3 present in a two dimensional array passed as the argument to the function.

432. Write a function in C++ which accepts a 2D array its size as arguments/ parameters and find the maximum element in each column.

CLASS XII PROGRAMS

1D Array Programs

433. Write a function in C++ which accepts an integer array and its size as arguments and change all the even number with twice and odd with thrice.

434. Write a function in C++ to return the element which is present maximum number of times in an array . the function prototype is given below.

Int MAX(int arr[], int size)

e.g : If the array is 2 4 2 4 2 4 2 4 2 4 2 2 4 then the function will return a value 2

435. Write a C++ function RevDup(int [], int) to remove the duplicate occurrence of the value Present in an integer array, passed to the function as a parameter.

For e.g. If array initially is X[] = { 1,1,1,7,5,2,2,6}

After removing duplicate values the array will be X {} = {1, 7, 5, 2, 6}

436. Write a function in C++ which accepts an integer array and its size as parameters and rearrange the array in reverse. Example : if an array of nine elements initially contains the elements as

4,2,5,1,6,7,8,12,10

then the function should rearrange the array as

10,12,8,7,6,1,5,2,4

437. Write a function in C++ which accepts an integer array and its size as arguments/parameters and exchange the values of first half side elements with the second half side elements of the array.

Ex:- If an array of eight elements has initial content as
2,4,1,6,7,9,23,10
The function should rearrange the array as
7,9,23,10,2,4,1,6

438. Write a function in C++ to search an element in a sorted array containing floating point values, using binary search. If the search is successful function returns the position and -1 otherwise .

An array Mark[40] contains the marks of 40 students in a class. Write a function in C++ to count the number of students in a class. Write a function in C++ to count the number of students

(a) Who scored more than 60 (b) who scored below 33.

439. Given two arrays of integers a and B of sizes M and N respectively. Write a function named MIX() which will produce a third array named C, such that the following sequence is followed:

- (a) All even numbers of A from left to right are copied into C from left to right.
- (b) All odd numbers of A from left to right are copied into C from right to left.
- (c) All even numbers of B from left to right are copied into C from left to right.
- (d) All odd numbers of B from left to right are copied into C from right to left.

440. Suppose a one dimensional array AR containing integers is arranged in ascending order. Write a user defined function in C++ to search for one integer from AR with the help of binary search method , returning an integer 0 to show absence of the number and integer 1 to show presence of the number in the array . The function should have three parameters (i) the array (ii) the number to be searched (iii) the number of elements N in the array.

441. Write a function *FIBSORT()*, to find whether the given integer array arr[10] is sorted in ascending order or descending order or not in order. The function should return 'A' for ascending order, 'D' for descending order and 'N' for no order.

442. Given two arrays A and B. Array 'A' contains all the elements of 'B' but one more element extra. Write a c++ function which accepts array A and B and its size as arguments/parameters and find out the extra element in Array A. (Restriction: array elements are not in order)

Example If Array A is {14, 21, 5, 19, 8, 4, 23, 11}

and Array B is {23, 8, 19, 4, 14, 11, 5 }

Then output will be 5 (extra element in Array A)

443. Suppose A,B,C are arrays of integers of size M, N and M + N respectively The numbers in array A appear in ascending order and B appear in descending order. Give the necessary declaration for array A,B and C in C++. Write a user define function in C++ to produce third array C by merging arrays A and B in ascending order.

444. Write a C++ function RevDup(int [], int) to remove the duplicate occurrence of the value present in an integer array, passed to the function as a parameter

For e.g. If array initially is X[] = { 1,1,1,7,5,2,2,6}

After removing duplicate values the array will be X[] = { 1,7,5,2,6}

445. A one-dimensional array SCORE is containing long data type arranged in ascending order. Write a user defined function in C++ to search for a number from SCORE with the help of binary search method. The function should return an integer -1 to show absence of the number and integer 1 to show presence of the number in the array. The function should have three parameters as (1) an array SCORE, (2) the number SDATA to be searched, (3) number of elements N.

446. Write C++ function to Arrange(int [],int) to arrange all the negative and positive numbers of the from left to right.

For e.g an array of 10 elements initially contains { 4,5,6,-7,8,-2,-10,1,13,-20}

Then the function rearrange them in following manner

-20,-10,-7,-2 1,4,5,6,8,13

447. Define a function that would accept a one dimensional integer array and its size. The function should reverse the contents of the array without using another array. (main() function is not required)

448. Suppose A,B,C are arrays of size m,n,m+n respectively. Array A is stored in ascending order and array B is in descending order. Write a function to receive 3 arrays and their sizes to store the elements of A and B into C in descending order.

449. Write a user defined function in C++ which intakes one dimensional array and size of array as argument and find sum of elements which are even.

If 1D array is 10 , 2 , 3 , 4 , 5 , 16 , 17 , 23

Then even numbers in above array is 10 , 2 , 4 , 16

Sum = 10 + 2 + 4 + 16 = 32

Output is 32

450. Write a user defined function in C++ which intakes one dimensional array and size of array as argument and find sum of elements which are positive.

If 1D array is 10 , 2 , -3 , -4 , 5 , -16 , -17 , 23

Then positive numbers in above array is 10, 2, 5, 23

Sum = 10 + 2 + 5 + 23 = 40

Output is 40

451. Write UDF in C++ to find a name from a list of names using binary search method.

452. Write UDF in C++ to insert an element in a one-dimensional sorted array in such a way that after insertion the array remain sorted.

453. Write UDF in C++ to delete a name from a list of names.

454. Write a function in C++ which accepts an integer array and its size as arguments/parameters and exchanges the values at alternate locations .

example : if the array is 8,10,1,3,17,90,13,60

then rearrange the array as 10,8,3,1,90,17,60,13

455. Write a function in C++ which accepts an integer array and its size as arguments/parameters and reverse the contents of the array without using any second array.

456. Write a function in C++ which accepts a integer array and its size as an arguments and prints the output (using nested loops) in following format :

Example : if the array is having

1 2 4 5 9

Then the output should be

1

2 2

4 4 4 4

5 5 5 5 5

9 9 9 9 9 9

457. Write a function in C++ which accepts a character array and its size as arguments and reverse that array without using second array and library function.

Example : if the array is having: "Computer Science"

Then after reversal it should rearranged as: "ecneicS retupmoC"

458. WAF that accept an array of 10 integers with size. The function fins a particular number from the array by using the binary search method

LEARN IN THIS SESSION

459. Write a function SORTPOINTS () in C++ to sort an array of structure Game in descending order of points using bubble sort.

460. Write a function SORTSCORE() in C++ to sort an array of structure Examinee in descending order of score using Bubble sort.

struct Examinee

```
{  
    long RollNo;  
    char Name[20];  
    float score;  
};
```

Sample Content of the array (before sorting)

| RollNo | Name | Score |
|--------|---------------|-------|
| 1001 | Ravyank Kapur | 300 |
| 1005 | Farida Khan | 289 |
| 1002 | Anika Jain | 345 |
| 1003 | George Peter | 297 |

Sample Content of the array (after sorting)

| RollNo | Name | Score |
|--------|------------|-------|
| 1002 | Anika Jain | 345 |

| | | |
|------|------------------|-----|
| 1001 | Ravyank Kapur | 300 |
| 1003 | George Peter | 297 |
| 1005 | Farida Khan | 289 |

461. The following numbers (89, 20,31,56,20,64,48) are required to be sorted using selection sort showing how the list would appear at the end of each pass.

462. Considering the following key set : 42,29,74,11,65,58 use bubble sort the data in ascending order and indicate the sequence of steps required.

463. Considering the following key set : 42, 29,74,11,65, 58 use insertion sort to sort the data in ascending order and indicate the sequences of steps required.

464. Assume an array E containing elements of structure Student is required to be arranged in ascending order of the marks. Write a C++ function to arrange the same with the help of insertion sort the array and its size is required to be passed as parameters to the function. Definition of structure Student is as follows:

```
struct Student
{
    int Rollno;
    char Name[25];
    float Marks;
};
```

465. Write a function to sort an array with the help of selection sort.

466. Write a C++ function to sort an array having N integers in descending order using **insertion sort method**.

467. Write a function in C++ which accepts an integer array and size as arguments and sort all the elements in ascending order using selection sort technique.

468. Write UDF in C++ to sort an array (storing names) in ascending order using insertion sort.

469. Consider the following key set : 42, 29, 74, 11, 65, 58, use bubble sort to sort the data in ascending order and indicate the sequences of steps required.

470. We have an array ARR of size N. Write a function SORT_INSERTION() to arrange the array ARR in ascending order.

2D Array Programs

471. Write an user defined Sumup(int [][]) to display sum of upper half elements of a square matrix. The function will return the sum of the values.

472. Write a function in C++ to find sum of rows from a two dimensional array.

473. Define a function SWAPCOL() in c++ to swap (interchange) the first column elements with the last column elements , for a two dimensional integer array passed as the argument of the function.

Example : If the two dimensional array contains

| | | | |
|---|---|---|---|
| 2 | 1 | 4 | 9 |
| 1 | 3 | 7 | 7 |
| 5 | 8 | 6 | 3 |
| 7 | 2 | 1 | 2 |

After swapping of the content of 1st column and last column, it should be:

| | | | |
|---|---|---|---|
| 9 | 1 | 4 | 2 |
| 7 | 3 | 7 | 1 |
| 3 | 8 | 6 | 5 |
| 2 | 2 | 1 | 7 |

474. Write a function in C++ to print the sum of all the values which are either divisible by 2 or are divisible by 3 present in a two dimensional array passed as the argument to the function.

475. Write a function in C++ which accepts a 2D array its size as arguments/ parameters and find the maximum element in each column.

476. Write UDF in C++ which accepts an integer array and its size as arguments/ parameters and assign the elements into a 2 D array of integers in the following format:

If the array is 1,2,3,4,5.

The resultant 2D array is given below

```
1 0 0 0
1 2 0 0
1 2 3 0
1 2 3 4
1 2 3 4 5
```

477. Write UDF in C++ to print the row sum and column sum of a matrix.

478. Write a user defined function in C++ to find and display the column sums of a two dimensional array MAT[7][7].

479. Write a function SWAPARR() in C++ to swap (interchange) the first row elements with the last row elements, for a two dimensional integer array passed as the argument of the function.

Ex:- If the 2D array is

| | | | |
|---|---|---|---|
| 5 | 6 | 3 | 2 |
| 1 | 2 | 4 | 9 |
| 2 | 5 | 8 | 1 |
| 9 | 7 | 5 | 8 |

After swapping of the content of first row and last row, it should be as follows :

| | | | |
|---|---|---|---|
| 9 | 7 | 5 | 8 |
| 1 | 2 | 4 | 9 |
| 2 | 5 | 8 | 1 |
| 5 | 6 | 3 | 2 |

480. Write a function in C++ which accepts an integer array and its size as arguments/parameters and assigns the elements into a two dimensional array of integers in the following format. **3**

if the array is 9,8,7,6,5,4

The resultant 2D array is given below

| | | | | | |
|---|---|---|---|---|---|
| 9 | 9 | 9 | 9 | 9 | 9 |
| 8 | 8 | 8 | 8 | 8 | 0 |
| 7 | 7 | 7 | 7 | 0 | 0 |
| 6 | 6 | 6 | 0 | 0 | 0 |
| 5 | 5 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 |

if the array is 1, 2, 3

The resultant 2D array is given below

| | | |
|---|---|---|
| 1 | 1 | 1 |
| 2 | 2 | 0 |
| 3 | 0 | 0 |

481. Write a function Sym(int[[]]) to find if a square matrix is symmetric or not. If it is symmetric than the function will return 1 , otherwise will return 0.

482. Write a user defined function in C++ which accepts a squared integer matrix with odd dimensions (3*3, 5*5 ...) & display the sum of the middle row & middle column elements.

For ex. :

| | | |
|---|---|---|
| 2 | 5 | 7 |
| 3 | 7 | 2 |
| 5 | 6 | 9 |

The output should be :

Sum of middle row = 12
Sum of middle column = 18

483. Write a user defined function in C++ to find and display the column sums of a two dimensional array MAT[7][7].

484. Write a function in C++ which accepts an integer array and its size as arguments/parameters and assign the elements into a two dimensional array of integers in the following format (size must be odd)

If the array is 1 2 3 4 5

The output must be

```
1 0 0 5
0 2 0 4 0
0 0 3 0 0
0 2 0 4 0
1 0 0 5
```

If the array is 10 15 20

The output must be

```
10 0 20
0 15 0
10 0 20
```

485. Write a function in C++ which accepts a 2D array of integers and its size as arguments and displays elements which are exactly two digit number.

If 2D array is

| | | | | | |
|---|------|-----|-----|------|---|
| [| 129 | 3 | 9 | 14 |] |
| | 2 | 25 | 146 | 1431 | |
| | 1924 | 32 | 45 | 327 | |
| | 11 | 455 | 28 | 18 | |

Output is

14 25 32 45 11 28 18

486. Write a function in C++ which accepts an integer 2D array, its size and row number as arguments and display the sum of particular row.

If 2D array is

| | | | | | |
|---|---|---|----|----|---|
| [| 1 | 5 | 9 | 13 |] |
| | 2 | 6 | 10 | 14 | |
| | 3 | 7 | 11 | 15 | |
| | 4 | 8 | 12 | 16 | |

Row Number is 2

Then $3 + 7 + 11 + 15 = 36$ Output is Sum = 36

487. Assume an array E containing elements of structure employee is required to be arranged in descending order of salary. Write a C++ function to arrange the same with the help of bubble sort, the array and its size is required to be passed as parameters to the function. Definition of structure Employee is as follows :

```
struct employee
{
    int Eno;
    char name[25];
    float salary;
};
```

488. Given two arrays of integers X and Y of sizes m and n respectively. Write a function named MERGE() which will produce a third array Z, such that the following sequence is followed.

- (i) All odd numbers of X from left to right are copied into Z from left to right.
- (ii) All even numbers of X from left to right are copied into Z from right to left.
- (iii) All odd numbers of Y from left to right are copied into Z from left to right.
- (ii) All even numbers of Y from left to right are copied into Z from right to left.

489. Write a function in C++ which accepts an integer array and its size as arguments/parameters and assigns the elements in to two dimensional array of integers in the following format:

If the array is **1,2,3,4,5,6**, then the resultant 2D array should be :

```
1 2 3 4 5 6
1 2 3 4 0 0
1 2 3 0 0 0
1 2 0 0 0 0
1 0 0 0 0 0
1 0 0 0 0 0
```

490. Write a function in C++ to print the sum of all the values which are divisible by 10 or 20 present in a two dimensional array passed as the argument to the function.

491. Write a user defined function in C++ to multiply 5 to each element of array X[4][4] except diagonal elements.

492. Write a function in C++ to find and display the sum of each row and each column of a 2D array of type float. Use the array and its size as parameters with float as its return type.

493. Write a function in C++ named UpperHalf() which takes a two dimensional array A, with size M rows and N columns as argument and prints the upper half to the array. e.g.,

| | | |
|---------|--------------------|---------|
| 2 3 1 5 | | 2 3 1 5 |
| 3 1 5 7 | | 1 5 7 |
| 1 0 6 8 | The output will be | 6 8 |
| 2 2 5 4 | | 4 |

494. To read two dimn. matrix and print the diagonal elements

495. Write a function in C++ which accepts an integer array and its size as arguments/ parameters and then assigns the elements into a two dimensional array of integers in the following format:

If the array is 1, 2, 3, 4, 5, 6
The resultant 2 D array is given below

| | | | | | |
|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 0 | 2 | 1 |
| 0 | 0 | 0 | 3 | 2 | 1 |
| 0 | 0 | 4 | 3 | 2 | 1 |
| 0 | 5 | 4 | 3 | 2 | 1 |
| 6 | 5 | 4 | 3 | 2 | 1 |

If the array is 1, 2, 3
The resultant 2 D array is given below

| | | |
|---|---|---|
| 0 | 0 | 1 |
| 0 | 2 | 1 |
| 3 | 2 | 1 |

496. Write a function in c++ to obtain the lower triangular matrix from a square matrix A[3][3] .ie store all the elements below the main diagonal and on the main diagonal into another matrix B and store 0 in the remaining elements of B .

CHAPTER 13

STRUCTURES

BELLOW AVERAGE PROGRAMS

497. Write a C++ program that illustrates the structures

498. Write a structure called Box that includes the data members length, breadth, height and volume of float types and implement it by writing C++ program.

499. Write structure specification that includes two structures— **distance** and **time**. The distance includes two data members both of type float called feet and inches. The time structure includes three data members all of type int called hrs,mins and secs. Initialize such a structure with values 1345.00 feet, 8.5 inches, 10 hrs, and 17 secs. Write a C++ program to implement the same.

500. Write a C++ program that declares and read in values (from user) for an array **ARR** of size 10 whose elements consist of name, category marks in 5 subjects and registration number. The category can be one of **Gen, Sc, ST & OBC**. The registration number is combination of areacode, regioncode, schoolcode, current year(yy) and serial no.

501. Give appropriate declaration to store 10 records where each record stores the following information

Author information are: Authorno, authername,

Booklist information are: bookno, bookname, subject, price, edition and publication.

The publication stores the following information:

proprietorname, companyname, address and phoneno

Write a C++ program to implement the above said structure.

502. Define a structure that stores information of **fish**. The structure should include the kind, the weight in grams and the length in inches declare the data members of this structure type and implement it by writing C++ program.

AVERAGE PROGRAMS

503. Define a structure called **EMPREC** that stores information about the an employee such as empno, ename, address, salary and joining_date. The address member of **EMPREC** stores the information about houseno, area and the city. The joining_date member of **EMPREC** stores the information day, month and the year. Implement it by writing C++ program.

504. Write a function in C++ that accepts a date (dd mm yy) as a parameter and gives a date 50 after it.

505. A point on the two-dimensional plane can be represented by two numbers : an X coordinate and a Y coordinate. For example: (4,5) represents a point 4 units to the right of the origin along the X axis, and 5 units up to the Y axis. The sum of two points can be defined as a new point whose X coordinate is the sum of the X coordinate of the two points, and whose Y coordinate is the sum of their Y coordinates.

506. Write a C++ program that uses a structure called point to model a point. Define three points, and have the user input values to two of them. Then set the third point equal to the sum of the other two and display the value of the new point. Interaction with the program might look like this:

Enter coordinates for p1 : 2 3

Enter coordinates for p2 : 6 8

Coordinates of p1 + p2 are : 8 , 11

507. Declare and initialize an array of 5 structures that store rol no, name and marks in 3 subject for students and implement it by writing C++ program.

508. Write a C++ program that can sort a lost of names and telephone number alphabetically. Names to be treated as a unit (define them inside the structure)

Persons are sorted alphabetically be their last names. Persons with the same last name are sorted by their first names

509. Assuming suitable data types, give necessary declarations for an array of 20 voter records, each record of which consists of four data values viz. id-no, name, address, age.

Make use of above declarations

ABOVE AVERAGE PROGRAMS

510. The roll numbers, marks in English, computers and marks out of 100 for 50 students (i.e need not to read them)

Write a function in C++, using structures to calculate the following

- a) No. of students passed with distinction.
- b) Details of top two scorers.
- c) Number of student failed.

511. Write a C++ program that declares the structure to represent complex number (a number having a real part and an imaginary part). Write a C++ function to add, subtract, multiply and divide two complex numbers.

512. Write a C++ program to record the score of cricket match. One array stores information of batting team such as batsman's name, runs scored, indication if out, mode by which out along with total runs, overs played, total overs and extras.

The array stores the information of bowling team such as bowler's name, overs bowled, maiden overs, runs given and wickets taken.

The program reads in the above information and depending upon the users choice, it displays either batting team's information or the bowling team information.

513. Define a structure called **EMPLOYEE** to store the details of employees and Write a C++ program to calculate the Gross and net Salary of an employee

Gross Salary is calculated as follows,

$$\text{basic} \times \text{days_worked} / 26 + \text{basic} \times \text{hra_rate} / 100 + \text{basic} \times \text{da_rate} / 100 + \text{CCA}$$

The Net salary is calculated as follows,

$$\text{Gorss_Salary} - \text{basic} \times \text{it_rate} / 100 + + \text{basic} \times \text{pt_rate} / 100$$

514. A phone number such as (011) 7118802 can be thought of as having three parts area code (011) the exchange (711) and the number (8802). Write a C++ program that uses a structure to store these three parts of a phone number separately. Call the structure phone. Create an array to store 20 records of its members wherein each record stores the memberno, member name and phone number of phone type. Have the user input the information for all the records and then display the entire information on the screen.

515. Write a C++ program to create a structure called volume that uses three variables (length, width, height) of type distance (feet and inches) to model the volume of a room. Read the three dimensions of the room and calculate the volume it represents, and print out the result. The volume should be in feet³ from i.e., you will have to convert each dimension in to feet and fractions of foot. For instance the length 12 feet 6 inches will be 12.5

516. Write a C++ program to prepare the invoice from the following data:

- customer number
- customer name and address
- date of sale, description
- quantity
- unit price
- discount percentage
- sales tax percentage

517. Details of 50 clients of an investment company are stored in an array of structures. Details include customer name, code, date of starting, number of years, interest rate and total amount. Write a C++ program to calculate the compound interest for these clients.

518. A linear array of size 50 stores following informations : name of the country, country capital and per capita income of the country. Write a complete C++ program to do the followings:

- a) To read a country's name and display capital and per-capita income
- b) To read name of the capital city and displays country name and per capital income.

519. Write a C++ program using structure having members age, percentage, in interview and result to get and display the details of a candidate who has attended an interview

520. Write a C++ program to prepare a salary chart of daily wages employees using an array of structures.

521. Design the structure named distance to store the length in feet and inches using this structure write a C++ program to add two distances inputted by user.

PROGRAMS USING FUNCTIONS

522. Write a C++ program that declares the structure to represent complex number (a number having a real part and an imaginary part). Write a C++ function to add, subtract, multiply and divide two complex numbers.

523. Write a C++ program to record the score of cricket match. One array stores information of batting team such as batsman's name, runs scored, indication if out, mode by which out along with total runs, overs played, total overs and extras.

The array stores the information of bowling team such as bowler's name, overs bowled, maiden overs, runs given and wickets taken.

The program reads in the above information and depending upon the users choice, it displays either batting team's information or the bowling team information.

524. Define a structure called **EMPLOYEE** to store the details of employees and Write a C++ program to calculate the Gross and net Salary of an employee

Gross Salary is calculated as follows,

$$\text{basic} \times \text{days_worked} / 26 + \text{basic} \times \text{hra_rate} / 100 + \text{basic} \times \text{da_rate} / 100 + \text{CCA}$$

The Net salary is calculated as follows,

$$\text{Gorss_Salary} - \text{basic} \times \text{it_rate} / 100 + + \text{basic} \times \text{pt_rate} / 100$$

525. Write structure specification that includes two structures– **distance** and **time**. The distance includes two data members both of type float called feet and inches. The time structure includes three data members all of type int called hrs,mins and secs. Initialize such a structure with values 1345.00 feet, 8.5 inches, 10 hrs, and 17 secs. Write a C++ program to implement the same.

526. Write a C++ program that declares and read in values (from user) for an array **ARR** of size 10 whose elements consist of name, category marks in 5 subjects and registration number. The category can be one of **Gen, Sc, ST & OBC**. The registration number is combination of areacode, regioncode, schoolcode, current year(yy) and serial no.

SOLUTIONS

//Program to find norm and trace of given matrix.

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
int a[10][10],sum=0,i,j,m,n,trace=0;
float norm;
printf("enter order");
scanf("%d %d",&m,&n);
printf("enter elements ");
for(i=0;i<m;i++)
{for(j=0;j<m;j++)
scanf("%d",&a[i][j]);
}

for(i=0;i<m;i++)
{
for(j=0;j<m;j++)

{
sum=sum+(a[i][j]*a[i][j]);
if(i==j)
trace=trace+a[i][j];
}
}
norm=sqrt(sum);
printf("norm=%f\n trace=%d",norm,trace);
}
```

//Program to find inverse of a matrix.

```
#include<stdio.h>
#include<math.h>
float detrm( float[][ ], float );
void cofact( float[][ ], float );
void trans( float[][ ], float[][ ], float );
main()
{
float a[ 25 ][ 25 ], k, d;
int i, j;
printf( "ENTER THE ORDER OF THE MATRIX:\n" );
scanf( "%f", &k );
printf( "ENTER THE ELEMENTS OF THE MATRIX:\n" );
for ( i = 0;i < k;i++ )
{
for ( j = 0;j < k;j++ )
{
scanf( "%f", &a[ i ][ j ] );
}
}
d = detrm( a, k );
printf( "THE DETERMINANT IS=%f", d );
if ( d == 0 )
printf( "\nMATRIX IS NOT INVERSIBLE\n" );
else
cofact( a, k );
}
/*****FUNCTION TO FIND THE DETERMINANT OF THE
MATRIX*****/
float detrm( float a[ 25 ][ 25 ], float k )
{
float s = 1, det = 0, b[ 25 ][ 25 ];
int i, j, m, n, c;
if ( k == 1 )
{
return ( a[ 0 ][ 0 ] );
}
else
{
det = 0;
for ( c = 0;c < k;c++ )
{
m = 0;
n = 0;
for ( i = 0;i < k;i++ )
{
for ( j = 0;j < k;j++ )
{
b[ i ][ j ] = 0;
if ( i != 0 && j != c )
{
b[ m ][ n ] = a[ i ][ j ];
```

```

if ( n < ( k - 2 ) )
n++;
else
{
n = 0;
m++;
}
}
}
}
det = det + s * ( a[ 0 ][ c ] * detrm( b, k - 1 ) );
s = -1 * s;
}
}
return ( det );
}
/*****FUNCTION TO FIND COFACTOR*****/
void cofact( float num[ 25 ][ 25 ], float f )
{
float b[ 25 ][ 25 ], fac[ 25 ][ 25 ];
int p, q, m, n, i, j;
for ( q = 0; q < f; q++ )
{
for ( p = 0; p < f; p++ )
{
m = 0;
n = 0;
for ( i = 0; i < f; i++ )
{
for ( j = 0; j < f; j++ )
{
b[ i ][ j ] = 0;
if ( i != q && j != p )
{
b[ m ][ n ] = num[ i ][ j ];
if ( n < ( f - 2 ) )
n++;
else
{
n = 0;
m++;
}
}
}
}
}
fac[ q ][ p ] = pow( -1, q + p ) * detrm( b, f - 1 );
}
}
}
trans( num, fac, f );
}
/*****FUNCTION TO FIND TRANSPOSE AND INVERSE OF A
MATRIX*****/
void trans( float num[ 25 ][ 25 ], float fac[ 25 ][ 25 ], float r )
{

```

```

int i, j;
float b[ 25 ][ 25 ], inv[ 25 ][ 25 ], d;
for ( i = 0; i < r; i++ )
{
for ( j = 0; j < r; j++ )
{
b[ i ][ j ] = fac[ j ][ i ];
}
}
d = detrm( num, r );
inv[ i ][ j ] = 0;
for ( i = 0; i < r; i++ )
{
for ( j = 0; j < r; j++ )
{
inv[ i ][ j ] = b[ i ][ j ] / d;
}
}
printf( "\nTHE INVERSE OF THE MATRIX:\n" );
for ( i = 0; i < r; i++ )
{
for ( j = 0; j < r; j++ )
{
printf( "\t%f", inv[ i ][ j ] );
}
printf( "\n" );
}
}

```

// function to convert binary to decimal

```

void Bin2Dec()
{
int bin, n, r, s=0, i;
printf("Enter a binary number\n");
scanf("%d", &bin);
n=bin;
for(i=0; n!=0; i++)
{
r=n%10;
s=s+r*(int)pow(2,i);
n=n/10;
}
printf("The equivalent number of %d is %d\n", bin, s);
}

```

// function to convert octal to decimal

```

void Oct2Dec()
{
int oct, n, r, s=0, i;
printf("Enter an octal number\n");
scanf("%d", &oct);

```

```

n=oct;
for(i=0;n!=0;i++)
{
    r=n%10;
    s=s+r*(int)pow(8,i);
    n=n/10;
}
printf("The equivalent number of %d is %d\n",oct,s);
}

```

// function to convert Hexa decimal to decimal

```

void Hex2Dec()
{
    char hex[N];
    int i,j,n[N],l;
    long double dec=0;
    printf("Enter the hexa decimal number and find it's decimal equivalent\n");
    fflush(stdin);
    gets(hex);
    l=strlen(hex);
    for(i=0;i<l;i++)
    {
        switch(hex[i])
        {
            case '0':
                n[i]=hex[i]-48; //Ascii code of 0 is 48 48-48=0//
                break;
            case '1':
                n[i]=hex[i]-48; //Ascii code of 1 is 49 49-48=1//
                break;
            case '2':
                n[i]=hex[i]-48; //Ascii code of 2 is 50 50-48=2//
                break;
            case '3':
                n[i]=hex[i]-48; //Ascii code of 3 is 51 51-48=3//
                break;
            case '4':
                n[i]=hex[i]-48; //Ascii code of 4 is 52 52-48=4//
                break;
            case '5':
                n[i]=hex[i]-48; //Ascii code of 5 is 53 53-48=5//
                break;
            case '6':
                n[i]=hex[i]-48; //Ascii code of 6 is 54 54-48=6//
                break;
            case '7':
                n[i]=hex[i]-48; //Ascii code of 7 is 55 55-48=7//
                break;
            case '8':
                n[i]=hex[i]-48; //Ascii code of 8 is 56 56-48=8//
                break;
            case '9':
                n[i]=hex[i]-48; //Ascii code of 9 is 57 57-48=9//

```

```

        break;
    case 'A':
        n[i]=hex[i]-55; //Ascii code of A is 65 65-55=10//
        break;
    case 'B':
        n[i]=hex[i]-55; //Ascii code of B is 65 66-55=11//
        break;
    case 'C':
        n[i]=hex[i]-55; //Ascii code of C is 65 67-55=12//
        break;
    case 'D':
        n[i]=hex[i]-55; //Ascii code of D is 65 68-55=13//
        break;
    case 'E':
        n[i]=hex[i]-55; //Ascii code of E is 65 68-55=14//
        break;
    case 'F':
        n[i]=hex[i]-55; //Ascii code of F is 65 69-55=15//
        break;
    }
}
for(i=0,j=!i;i<l;i++,j--)
    dec=dec+(n[j-1]*pow(16,i));
printf("The decimal equivalent is %lg \n",dec);
}

```

//Function to convert Decimal to Binary

```

void Dec2Bin()
{
    int n,bin[100],i,j;
    printf("Enter A Number To Find It's Binary Equivalence\n");
    scanf("%d",&n);
    printf("The Binary Equivalent of %d is \t",n);
    for(i=0;n!=0;i++)
    {
        bin[i]=n%2;
        n=n/2;
    }
    for(j=i-1;j>=0;j--)
    {
        printf("%d",bin[j]);
    }
    printf("\n");
}

```

//Function to Convert Decimal to Octal

```

void Dec2Oct()
{
    int n,r[10],i;
    printf("Enter a number to find it's octal equivalent\n");
}

```

```

scanf("%d",&n);
printf("The octal equivalent of %d is ",n);
for(i=0;n!=0;i++)
{
    r[i]=n%8;
    n=n/8;
}
i--;
for(;i>=0;i--)
    printf("%d",r[i]);
printf("\n");
}

```

//Function to Convert Decimal to Hexa Decimal

```

void Dec2Hex()
{
    int n,r[10],i;
    printf("Enter a number to get its hexadecimal equivalent\n");
    scanf("%d",&n);
    for(i=0;n!=0;i++)
    {
        r[i]=n%16;
        n=n/16;
    }
    i--;
    for(;i>=0;i--)
    {
        if(r[i]==10)
            printf("A");
        else if(r[i]==11)
            printf("B");
        else if(r[i]==12)
            printf("C");
        else if(r[i]==13)
            printf("D");
        else if(r[i]==14)
            printf("E");
        else if(r[i]==15)
            printf("F");
        else
            printf("%d",r[i]);
    }
    printf("\n");
}

```

// C++ Program to find the sum of sine series

$$\sin(x) = \sum_{n=0}^{\infty} \frac{(-1)^n x^{(2n+1)}}{(2n+1)!}$$

```

#include<iostream.h>
#include<math.h>
void main()

```

```

{
int i = 2, n, s = 1, x, pwr = 1, dr;
float nr = 1, x1, sum;
clrscr();
cout<<"\n\n\t ENTER THE ANGLE...: ";
cin>> x;
x1 = 3.142 * (x / 180.0); //to convert angle in to radians.
sum = x1;
cout<<"\n\t ENTER THE NUMBER OF TERMS...: ";
cin>>n;
for(i=2;i <= n; i+=2)
{
pwr = pwr + 2;
dr = dr * pwr * (pwr - 1);
sum = sum + (nr / dr) * s;
s = s * (-1);
nr = nr * x1 * x1;
}
cout<<"\n\t THE SUM OF THE SINE SERIES IS..: "<<sum;
getch();
}

```