D. Y. Patil College of Engineering and Technology, Kolhapur.
Department of Computer Science and Engineering
Academic Year: 2021-22

Course: Advanced C Programming **Course Code:** 201CSP205

Assignment No: 1

1. WAP to find ASCII Value of a character.
2. WAP to multiply two floating point numbers.
3. WAP to check if character is vowel or consonant.
4. WAP to find largest of three numbers using a)only if loop 2)if else if loop 3)nested if loop.
5. WAP to find roots of quadratic equation: $ax^2+bx+c=0$ where a, b and c are real numbers a!=0

$$root1 = \frac{-b + \sqrt{(b^2 - 4ac)}}{2a}$$

If the discriminant > 0,

$$root2 = \frac{-b - \sqrt{(b^2 - 4ac)}}{2a}$$

If the discriminant = 0, $root1 = root2 = \frac{-b}{2a}$

$$root1 = \frac{-b}{2a} + \frac{i\sqrt{-(b^2 - 4ac)}}{2a}$$

If the discriminant < 0,

$$root2 = \frac{-b}{2a} - \frac{i\sqrt{-(b^2 - 4ac)}}{2a}$$

6. WAP to find if a year is a leap year. A leap year is exactly divisible by 4 except for century years (years ending with 00). The century year is a leap year only if it is perfectly divisible by 400.
7. WAP to find a grade of students. (Using if else ladder)

Marks	**Grade**
100-80	Distinction
60-79	First class
50-59	Second class
40-49	Third class
0-39	Fail

8. WAP for simple calculator to perform addition, subtraction, Multiplication and division. (Using switch statement)
9. WAP to read a customer number and power consumed and prints amount to be paid.

Consumption unit charge	Rate
0-200	Rs. 0.50 per unit
201-400	Rs. 100 plus Rs. 0.65 per unit
401-600	Rs. 230 plus Rs. 0.80 per unit

10. WAP to evaluate the square root for five numbers. The variable count keeps the count of numbers read. When count is less than or equal to 5 , goto read , otherwise ; the program prints a message & stops. (Using goto)

Exercise:

1. Program to read a number and display it if positive number only.
2. Program to find whether given no. is even or odd using if and ternary operator.
3. Program to find whether given no. is positive or negative.
4. The cost of one type of mobile service is Rs. 250 plus Rs. 1.25 for each call made over & above 100 calls. Write a program to read customer codes & calls made & print the bill for each customer.
5. Program to read a character & check whether it alphabet, digit or special symbol.
6. Program to accept and display a number until entering a negative number.
7. Program to find largest no. among two numbers and three using conditional operator.
8. Program to check whether the character entered through the keyboard is a lower case alphabet or not.
9. Program to check whether a character entered through the keyboard is a special symbol or not using ternary operator.
10.

Assignment No: 2

1. WAP to create a multiplication table using loop.
2. WAP to find sum and average of n numbers using for, while and do while loo.p
3. WAP to find factorial of a number
4. WAP to find LCM and GCD of two numbers
5. WAP to display patterns

a)
```
*
* *
* * *
```

b)
```
1
1 2
1 2 3
```

c)
```
1
2 2
3 3 3
```

d)
```
1
2 3
4 5 6
```

f)
```
5678
678
78
8
```

g)
```
    1
  121
12321
1234321
```

h)
```
 1
 01
101
0101
```

Exercise:

1. C program to check whether given Number is prime or not?
2. C program to check whether given number is perfect or Not

[A perfect number is a positive integer that is equal to the sum of its proper positive divisors. That is the sum of its positive divisors excluding the number itself

3. C program to check whether given no. is Armstrong Number or not
   [Armstrong Number: when sum of cubes of digits of number equal to same given number then the number is called as Armstrong Number.]
   Ex: 153= [1*1*1]+ [5*5*5]+ [3*3*3]
   = 1+125+27
   = 153
4. C program to generate the Fibonacci series starting from any two numbers
5. A program to evaluate the evaluation: $y=x^n$ when n is a non-negative integer .
6. Program to print multiplication table from 1*1 to 12*10 as shown below

1	2	3……	10
2	4	6……	20
.	.	……..	.
.	.	……..	.
10	20	30….	120

7. Write a program to read the age of 20 persons and count the number of persons in the age group 50 to 60 use for & continue statements

Assignment No: 3

1. Write a program in C to read n number of values in an array and display it in reverse order.
2. Write a program in C to copy the elements of one array into another array
3. Write a program in C to count a total number of duplicate elements in an array
4. Write a program in C to print all unique elements in an array.
5. Write a program in C to find the maximum and minimum element in an array.
6. Write a program in C for addition, subtraction, multiplication of two Matrices of same size.
7. Write a program in C to Display Upper & Lower triangle matrix

Exercise:

1. Write a program in C to separate odd and even integers in separate arrays
2. Write a program in C to delete an element at desired position from an array.
3. Write a program in C to insert New value in the array (sorted list)
4. Write a program in C to find sum of right diagonals of a matrix.
5. Write a program in C to calculate determinant of a 3 x 3 matrix
6. Write a program in C to accept a matrix and determine whether it is a sparse matrix
7. Write a program in C to display of transpose of given matrix
8. Write a program in C to check symmetric matrix

Assignment No: 4

1. Write a program in C to find the length of a string without using library function.
2. Write a program in C to separate the individual characters from a string.
3. Write a program in C to print individual characters of string in reverse order.

4. Write a program in C to count the total number of words in a string.
5. Write a program in C to compare two strings without using string library functions
6. Write a program in C to check whether two given strings are an anagram.

Exercise:

1. Write a program in C to count total number of alphabets, digits and special characters in a string.
2. Write a program in C to copy one string to another string.
3. Write a program in C to find maximum occurring character in a string.
4. Write a program in C to extract a substring from a given string.

Assignment No: 5

1. Write a program in C to swap two numbers using function.
2. Write a program in C to find the sum of the series 1!/1+2!/2+3!/3+4!/4+5!/5 using the function.
3. Write a program in C to convert decimal number to binary number using the function

Assignment No: 6

1. Implement a C program to add two complex number by passing structure to function.
2. Implement a C program to calculate Employee salary using structure.
3. Implement a C program to demonstrate use of structure padding.
4. Implement a C program to access members of a structure using pointers
5. Implement a C program to create struct variable using dynamic memory Allocation and display the information.
6. Implement a C program to demonstrate difference between unions and structures.

Assignment No: 7 Implement a program using pointers and dynamic memory allocation functions.

1. Implement a C program for Pointer to function – to compute sum of array element.
2. Function having parameters as pointer– to reverse string without using string handling function.
3. Arrays and Pointers: Create an array using pointers and perform Addition, subtraction and multiplication.
4. Pointers and structure: create a Subject structure and access its members using a structure pointer that points to the address of the Subject variable in C.

Assignment No. 8: Implement a program using file handling.

1. Implement a C program to count number of characters, blank spaces, new lines and tabs in given file using command line argument.
2. Implement a C program to Copy one file into another using command line argument.
3. Implement a C program to read a file **DATA** which contains a series of integer numbers. Code a program to read these numbers and then write all ‘odd’ numbers to a file to be called **ODD** and all ‘even’ numbers to a file to be called **EVEN**.
4. Write a C program to open a file named INVENTORY and store in it the following data:

Item name	Number	Price	Quantity
AAA-1	111	17.50	115
BBB-2	125	36.00	75
CCC-3	247	31.75	104

Extend the program to read this data from the file INVENTORY and display the inventory table with the value of each item.

5. Write a C program that uses the functions ftell and fseek.
6. Write a C program to illustrate error handling in file operations.

Assignment No. 9: Implement program to create header file. (Use recursion)

1. Factorial of given number.
2. Find a largest number among 10 numbers.
3. The addition of first n numbers.
4. Display Fibonacci series.

Assignment No. 10: Implement program using bitwise operators.

1. Wap to demonstrate use of all bitwise operators

Assignment No. 11: Install and configure KEIL software for embedded C programming.

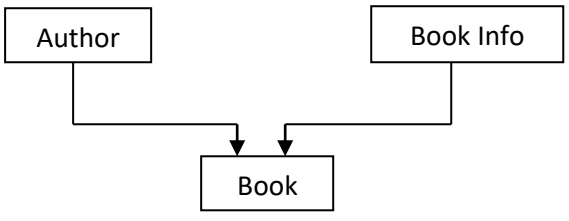
Assignment No. 12: LED blinking program using KEIL.

Assignment No. 13: Implement program using function & operator overloading.

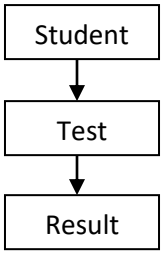
1. Program to find out area of different shapes using function overloading.
2. Write a program for all unary and binary operator using C++.
3. Program to overload +=, == and < operators for distance objects.
4. Program to overload insertion and extraction operators.

Assignment No. 14: Implement program using Inheritance.

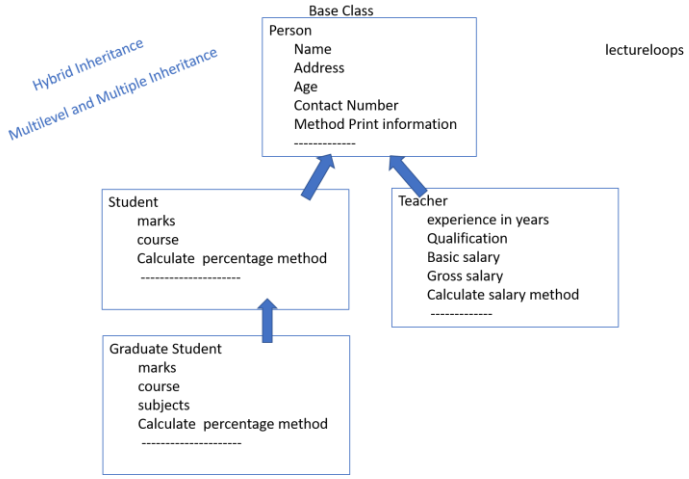
1. Program for multiple inheritance for following structure.



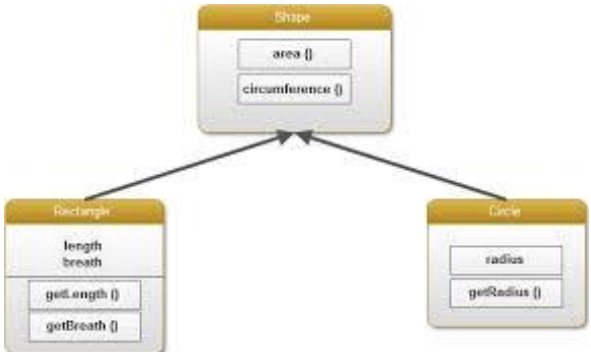
2. Program for multilevel inheritance for following structure



3. Write a program to perform Hybrid Inheritance.



4. Write a program to perform hierarchical inheritance for Educational Institute database.



Assignment No. 15: Implement program using friend & virtual function.

1. Program using friend function to add data objects of two different classes.
2. Program to use a common friend function to exchange the private values of two classes.
3. Implement binary search using virtual function.

Assignment No. 16: Implement program using Template & Exception Handling.

1. Implement stack using class template.
2. Write a program for merging two array using Standard Template Library.
3. Implementation of Exception handling for divide by zero and array index out of bound exception.

Subject Incharge **H. O. D**