Programming-II Worksheet

1. Write an int function cube () that returns the cube of its single int formal parameter.
2. Write a float function triangle() that computes the area of a triangle using its two formal parameters h and w, where h is the height and w is the length of the bases of the triangle.
3. Write a float function rectangle() that computes and returns the area of a rectangle using its two float formal parameters h and w, where h is the height and w is the width of the rectangle
4. The formula for a line is normally given as y = mx + b. Write a function Line() that expects three float parameters, a slop m, a y-intercept b, and an x-coordinate x. the function computes the y-coordinate associated with the line specified by m and b at x-coordinate.
5. Write a function Intersect() with four float parameters m1,b1,m2,b2. The parameters come conceptually in two pairs. The first pair contains the coefficients describing one line; the second pair contai ns coefficients describing a second line. The function returns 1 if the two lines intersect. Otherwise, it should return 0;
6. Write a program that accepts a positive integer from the user and displays the factorial of the given number. You should use a recursive function called factorial() to calculate the factorial of the number.
7. Write another program that accepts a number from the user and returns the Fibonacci value of that number. You should use recursion in here.
8. Develop a program that uses the function factorial() of exercise 6 to compute an approximation of e (Euler's number). Base your approximation on the following formula for e:
    a. 1 + 1/1! + 1/2! + 1/3! + …
9. Write a function called isPrime() that accepts a number and determine whether the number is prime or not.
10. Write a function called isEven() that uses the remainder operator(%) to determine whether an integer is even or not.
11. Modify our calculator problem of worksheet-3 using four functions sum(),product(),quotient() and difference().

12. Write a C++ code that computes the sum of the following series.

    Sum = 1! + 2! + 3! + 4! + …n!

The program should accept the number from the user. (use functions)

13. read 10 integers from the keyboard in the range 0 - 100, and count how many of them are larger than 50, and display this result

14. Write a program to store the ages of six of your friends in a single array. Store each of the six ages using the assignment operator. print the ages on the screen
15. Write a C++ program that accepts 10 integers from the user and finally displays the smallest value and the largest value.
16. Write a program that accepts ten different integers from the user and display these numbers after sorting them in increasing order.
17. Write a program to store six of your friend's ages in a single array. Assign the ages in a random order. print the ages, from low to high, on-screen
18. Modify the program on Q8 to print the ages in descending order.
19. Write a C++ program that calculates the letter grades of 20 students. The program should accept the mid result and the final result fr om the students. Use the appropriate validity control mechanism to prevent wrong inputs.
20. Write a C++ program that has two functions toBinary and toDecimal. The program should display a menu prompting the user to enter his choice. If the user selects toBinary, then the function should accept a number in base ten and displays the equivalent binary representation. The reverse should be done if the user selects toDecimal.
21. Develop a C++ program that accepts a word from the user and then checks whether the word is palindrome or not. (NB a word is palindrome if it is readable from left to right as well as right to left).
22. Write a C++ program that accepts a word from the user and then displays the word after reversing it.
23. Develop a C++ program that accepts the name of a person and then counts how many vowels the person's name have.
24. Modify the question in Q14 in such a way that it should replace vowel characters with * in the person name.

25. Write a program in C++ which read a three digit number and generate all the possible permutation of numbers using the above digits . For example n = 123 then the permutations are – 123, 213, 312, 132, 231, 321
26. Write a program which read a set of lines until you enter #.
27. Write a program which read two matrixes and then print a matrix which is addition of these two matrixes.
28. Write a program which reads two matrix and multiply them if possible
29. Write a program which reads a 3 x 2 matrix and then calculates the sum of each row and store that in a one dimension array.
30. Write a c++ program which can display the address of the given integer
31. Write a simple program which can add, subtract ,multiply and divide two numbers using pointer to functions
32. Write a c++ program that can show pointer arithmetic (+,-,++,--)
33. Write a program in c++ to read a set of characters using a pointer and to print in the reverse order.
34. Write a program in C++ to find the number of vowels in each word of a given text using a pointer.
35. Write a c++ program which can insert day, month and year from the keyboard and display date using structure /class
36. Write a c++ program which can insert name, age and height of a student using a function getData() and display the contents using a function Display()….use structure
37. Write a c++ program which can insert arrays of integers and calculate the sum of them using structure/class
38. Write a c++ program which can calculate area of triangle using pointers and structure (Area of triangle=1/2*L*W)
39. Write a c++ program which can read students' information (Name, Sex, Nationality, Age, Address (kebele, house no.)) and display:-
    a. Display all the data in a tabular form

b. Filter out only females and display the data in tabular form
c. Filter out only students whose ages are less than 20
   Use structure/class

40. Write a c++ program which can insert(student's age, height and birth date(day ,month ,year)) and display the contents . use union together with structure