

C Programming Assignment List

Day3

Control Sequence

1. Develop a C program having following logic. If i is 20 or j is 20, display as "Atleast one variable is having 20" otherwise display "Both variables are not having 20". If i is less than or equal to 40 and j is less than or equal to 40, It should display "Both are less than or equal to 40" otherwise, it should display as "Both are not less than or equal to 40". Implement this using if-else statement as well as with conditional operator.
2. Develop a C program which accepts character type data item from user. In case if user typed 'A' or 'a', it should display **A for Apple**
'B' or 'b', it should display **B for Bat**
'D' or 'd', it should display **D for Dog**
'F' or 'f', it should display **F for Fan**
Instead of the above 4 characters, if user types any other character, it should display **"Character is not in the range"**. Implement this using **if-else statement** and **switch statement**.
3. Develop a C program which adds all numbers from 1 to N, except those which are divisible by 5.
Implement this using for loop and continue statement.
4. Develop a C program to find factorial of a number N using for loop.
5. Develop a C program to find sum of all odd numbers upto N using while loop.
6. Write a program to print ASCII values of upper case and lower case alphabets and digits (A-Z, a-z and 0-9).
7. Write a Program to find if a given number is Armstrong number. Hint: $(153 = 1^3 + 5^3 + 3^3)$
8. Write a program to find whether given number is palindrome or not.
9. Write a menu based C program to perform operations (+, - and *) on matrices.
10. Generate the following pyramid of numbers using nested loops
1
212
32123
4321234
543212345
11. Write a program to search for an element in a given list of elements. Use break statement.
12. Write a program to print all the prime numbers in the first N numbers.
13. Write a program to find the sum of digits of a given number.
14. Write a C program to generate two Relatively Prime numbers.

15. Write a program to generate Random number

- Any
- Prime number
- Two Relatively Prime Numbers

16. Read two integers, representing a rate of pay (pence per hour) and a number of hours. Print out the total pay, with hours up to 40 being paid at basic rate, from 40 to 60 at rate-and-a-half, above 60 at double-rate. Print the pay as rupees to two decimal places.

Terminate the loop when a zero rate is

encountered. At the end of the loop, printout the total pay.

The code for computing the pay from the rate and hours is to be written as a function.

The recommended output format is something like:

Pay at 200 pence/hr for 38 hours is 76.00 rupees

Pay at 220 pence/hr for 48 hours is 114.40 rupees

Pay at 240 pence/hr for 68 hours is 206.40 rupees

Pay at 260 pence/hr for 48 hours is 135.20 rupees

Pay at 280 pence/hr for 68 hours is 240.80 rupees

Pay at 300 pence/hr for 48 hours is 156.00 rupees

Total pay is 928.80 rupees

Storage Class Specifiers

1. Develop multi file program to understand static, auto, register, global, static global variables. What is the scope and lifetime of each of these types of variables.

Arrays

1. Write a program to read your name into a character array. Print the name along with the length of your name and sizeof the array in which name is stored.
2. Use scanf function to read a string of characters (into character type array called text) including alphabets, digits, blanks, tabs etc except new line character. Write a loop that will examine each character in a character-type array and determine how many of the characters are letters, how many are digits, how many are blanks and how many are tabs. Assume that text contains 80 characters.
3. Write a program that reads a number that says how many integer numbers are to be stored in an array, creates an array to fit the exact size of the data and then reads in that many numbers into the array.

Functions

1. Write a program to calculate $n!/(n-r)!$ using functions.
2. Write a recursive function to find factorial of a number.
3. Write a function to swap contents of two variables using functions and pointer variables.

4. Write a C program with a function `rotate`. Write a program to add first seven terms of the following series:
5. $1 / 1! + 2 / 2! - 3 / 3! + 4 / 4! \dots$ right (n, b). This function rotates integer n towards right by b positions.
6. Write a C program with a function `invert` towards (n, p, b). This function inverts b bits of integer n, that begin at position p, leaving the others unchanged.
7. Write a C program with a function **tolower**, which converts upper case letters to lower case. Use conditional expression.
8. Develop a program to calculate nPr and nCr given n and r.
9. Write a function to get the transpose of a matrix.
10. Write a C program with two functions `itob (n, s)` and `itoh (n, s)`. `itob` converts integer into binary character representation in s. Similarly `itoh` converts integer into hexadecimal character representation in s.
11. Write a C program with a function `indexr(s,t)`, which returns the index of right most occurrence of t in s otherwise -1.
12. Write a C program with a recursive function `itoa`, which converts integer into a string.
13. Write a program to add first seven terms of the following series:
 $1 / 1! + 2 / 2! - 3 / 3! + 4 / 4! \dots$
14. Write a program to compute factorial and GCD using recursion.
15. Write a menu driven application that performs the functions of a calculator. The inputs from the user should be validated and error messages in case, inputs are not valid, should be displayed of multiplication, division, factorials (use recursion) and squares. Modularize the code wherever possible.