Assignment # 01

1. Which of the following are valid variable names:
   a. _front
   b. thisIsAVeryLongVariableName
   c. imagine-this
   d. 4tified
   e. f0r3v3r
   f. number of End game views
   g. float
   h. pub.g

2. Point out the errors in the following C statements. If there is any error then write the error message which is reported by the IDE and rewrite the correct statement:
   a. int $= 314.562 * 150$;
   b. $3.14 * r * r * h = $ vol_of_cyl ;
   c. $k = (a * b) (c + (2.5a + b) (d + e))$;
   d. inst $=$ rate of interest $*$ amount in rs ;
   e. $a = b = c = d$;
   f. count $=$ count $+ 1$;
   g. volume $= 3.14 * r \wedge 2 * h$;
   h. area $= 3.14 * r ** 2$;

3. Convert the following statements in corresponding C statements:
   a. $X = \dfrac{\frac{8.8(a+b)2}{c} - 0.5 + 2a/(q+r)}{(a+b)*(\frac{1}{m})}$
   b. $X = \dfrac{-b+(b*b)+2*4ac}{2a}$

4. What would be the output of the following program. Before executing the program in computer, please try to execute it line by line without compiler.

   ```
   main ( )
   {
     float a = 5, b = 2 ;
     int c ;
     c = a % b ;
     printf ( "%d", c ) ;
   }
   ```
   a.

```
main( )
{
  printf ( "nn \n\n nn\n" ) ;
  printf ( "nn /n/n nn/n" ) ;
}
```
b.
```
main( )
{
  int a, b ;
  printf ( "Enter values of a and b" ) ;
  scanf ( " %d %d ", &a, &b ) ;
  printf ( "a = %d b = %d", a, b ) ;
}
```
c.

5. Write C program for the following:
    a. The Salary of IUB SoD is calculated based on hourly basis. For each hour ,
        IUB pays taka 100 to the student. For example, if a student has served 80
        hours in a month then total payable amount would be 80*100 = 8000. But
        10% tax will be deducted from the total amount. Write a program which
        will take the number of hours served by the student and then print the
        salary sheet which would look exactly like the one below (please take
        care of the text alignment on the output screen, Hint: use \t wherever
        required) :
        ****

        Salary Sheet for the month of July, 2020

Hours served	:	80
Rate per Hour	:	100
Total	:	8000
(-10% tax)	:	- 800
Gross Payable	:	7200

        ****

    b. The distance between two cities (in km) is input through the keyboard.
        Write a program to convert and print this distance in meters, feet, inches
        and centimeters.
    c. If the marks obtained by a student in five different subjects are input
        through the keyboard, find out the aggregate marks and percentage
        obtained by the student. Assume that the maximum marks that can be
        obtained by a student in each subject is 100.
    d. Two integer numbers are input through the keyboard into two locations C
        and D. Write a program to interchange the contents of C and D.

e. If a five digit number is input through the keyboard, write a program to calculate the sum of its digits. (Hint: use % operator)
f. If a four digit number is input through the keyboard, write a program to reverse the number. Keep in mind that the resulted reversed number should be in one single variable. (Hint: use % operator)
g. If a five-digit number is input through the keyboard, write a program to print a new number by adding one to each of its digits. For example if the number that is input is 1239 then the output should be displayed as 2340.
h. The ATM machine can only give out the currency notes of 1000 and 500. Assume that the user has entered the value in the multiples of 500, and then your program should print how many currency notes of 1000 and 500 needs to be dispatched out of the machine. Also, assume that you have unlimited number of 1000 and 500 currency notes. Your program should deliver as least currency notes as possible For example, if the user has entered the amount to be withdrawn to 25500 then your program should print 25 notes of 1000 and 1 note of 500. (Hint: use % operator)
i. Advance your program written for problem h and assume that this time the ATM machine can also deliver the currency notes of 1, 5, 10, 50 and 100 along with 500 and 1000. If the amount to be withdrawn is taken as input then your program should print the currency notes required to deliver. Your program should deliver as least currency notes as possible Consider the sample input and output set given below:

Sample Input/Output:
Enter the amount: 365773
Number of notes required of 1000 denomination: 365
Number of notes required of 500 denomination: 1
Number of notes required of 100 denomination: 2
Number of notes required of 50 denomination: 1
Number of notes required of 10 denomination: 2
Number of notes required of 5 denomination: 0
Number of notes required of 1 denomination: 3