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NATIONAL INSTITUTE OF BUSINESS MANAGEMENT

DIPLOMA IN COMPUTER SYSTEM DESIGN – 2014.1

DATA STRUCTURES AND C LANGUAGE

27th August 2014, 09.00 a.m. – 12.00 noon.

Time: THREE hours.

Answer all questions

(1)   Write a single C statement for each of the following:

    a)   Increase the value of A by 1 and find the Remainder of A divided by B. Assign the result to C.

    b)   Subtract the value of Z by 1, then subtract Y from Z and assign the result to Z.

    c)   Assign the product of A and B to C and reduce the value of B by one.

    d)   Find the difference of A and B and increment the value of A by 1 and reduce B by 1. Assign the result to C.

(2*4 =8 Marks)

(2)   Determine the output and value of each variable after the execution of each code. All variables have the value of 2 before the execution of each statement
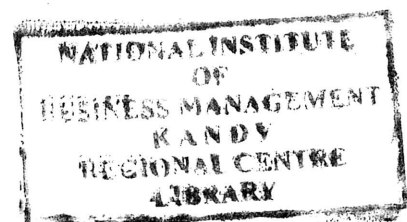
```
a)  printf(" %d ",c++);
b)  printf(" %d",sum=++sum+c++);
c)  printf("%d",x+=x + --c);
d)  printf(" %d %d %d",--sum+x,++c,x);
```

(2*4 =8 Marks)

(3)

    a)   What are the storage classes in C?

    b)   What do you mean by **comment in C**. briefly describe with suitable examples.

    c)   What is the general format of the function definition? Provide a suitable example.

    d)   What is the difference between **'Break'** and **'Continue'**? Explain.

    e)   What is the difference between **Global** and **Local**? Explain.

(3*5 = 15 Marks)

(4). Write a program to display the square root of numbers from 1 to 100.

(10 Marks)

(6) Write a *menu driven* program in C to process a temperature report for a week as given below (Use arrays).

a) A function to input the temperate.

b) A function to display the highest temperate and the lowest temperate.

c) A function to display the average temperature of the week.

d) A function to print all the temperate values in the week.

e) A function which sort the temperate values in to ascending order using **Direct Insertion sort**.

(30 Marks)

(7) Write a *menu driven* program in C for the following:

i) Input data to a Matrix U and V of length 3 and 3.

ii) Find the subtraction of two matrices U & V.

iii) Find total of all the element in the Matrices U and V.

(14 Marks)

(8) Write the output of the following programs.

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a)
```c
#include<stdio.h>
#include<conio.h>
void main(){
   int i,j=0,c=1;
 clrscr();
   while(c<3)
    {
        for(i=0;i<=3;i++)
        printf("%d ",++i+j);
        ++c;
    }
 getch();
}
```
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b).
```c
#include<stdio.h>
void main(){
   int c=1,sum=0;
  while(c!=7)
   {
     sum=sum+c;
     if(c!=8)
      {
            ++c;
            continue;
      }
     else
            printf("\n C = %d ",c);
   }
   printf("\n C = %d ",c);
}
```
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c) .
```c
#include<stdio.h>
void main(){
 int c,sum;
 clrscr();
 for(c=9;c>1;c++)
  {
   if(c-1>1)
    {
            c=--c-c;
            printf("\n C = %d ",c);
    }
   else
            break;
  }
}
```
</td><td>

```c
#include<stdio.h>
#include<conio.h>
 void main(){
   int i=1,j=1,x=0;
   clrscr();
            switch(i+j-1){
            case -1:
            case 0:x=x+1;break;
            case 1:
            case 3:x=x+2;break;
            default:x=x+3;
   }
   printf(" %d ",x++);

 getch();
}
```
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e).
```c
#include<stdio.h>
#include<conio.h>
 main(){
   int i,j=2,sum=0;
   clrscr();
   for(i=1;i<3;++i)
            for(j=0;j<i;j++)
             printf("\n i = %d",i+j+1);
            printf("\n sum = %d",sum+j);

getch();
return 0;
}
```
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*(3*5 = 15 Marks)*
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