Govt. Engineering college, Ajmer

Department of Computer Engineering & Information Technology

B.Tech I Year I Sem   Subject: Computer Programming-I

Mid Term-II (2017-18)   Duration: 1 HR   MM.:10

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-:Question Paper:-

Sem: B.Tech. I YEAR I SEM   MID-TERM-II (MAIN) 2017-18

Subject: CP-I   Duration: 1 Hr   MM: 10

Q.1 a)Differentiate Algorithm & Flowchart with the example of finding greatest no. among three numbers.   3

   b)Find the value of P,Q:- $(5167.73)_8 = (P)_7 = (Q)_{16}$ 2

Q.2 WAP to check weather given number is prime or not.   Or   2.5

   WAP to check weather given number is Armstrong or not.

Q.3 WAP to find the sum of given series: $1 + (1*2) + (1*2*3) + (1*2*3*4) + (1*2*3*4*5) + ...n$ terms.   2.5

-:Solution:-

Q 1 Differentiate Algorithm & Flowchart with the example of finding greatest no. Among three numbers.
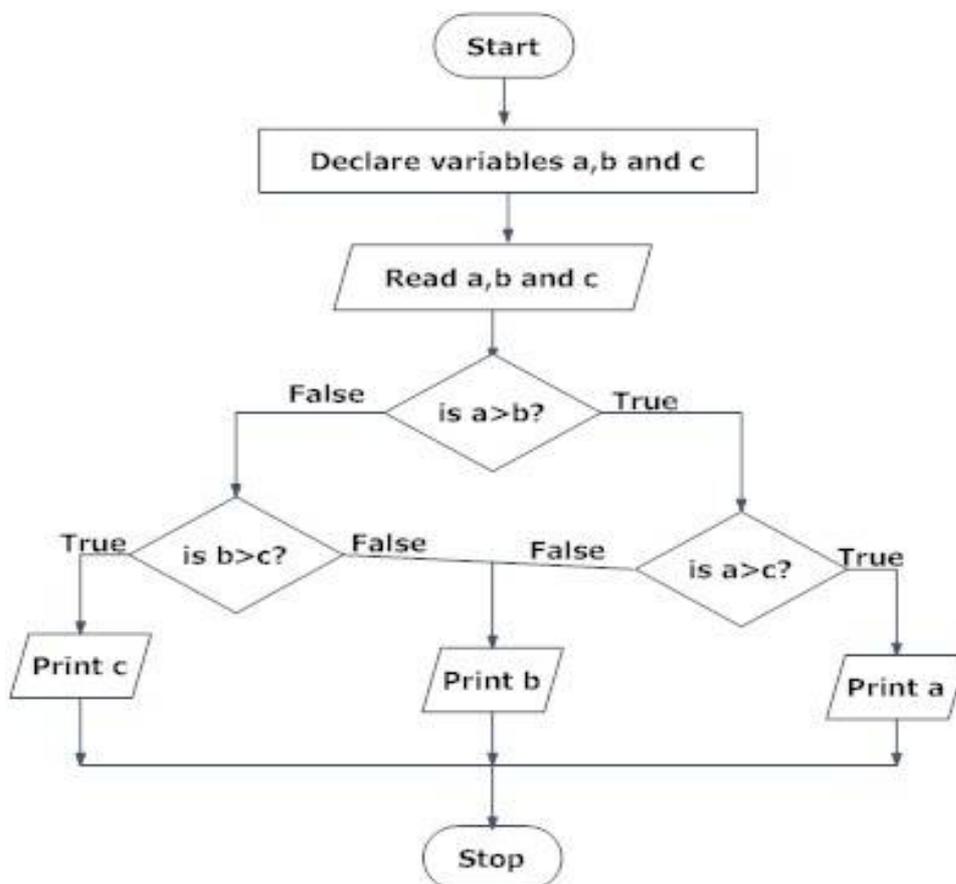
Solution:

Algorithm:

1. *Algorithm are the set of well defined instruction/step in sequence to solve a problem.*
2. *Algorithm should be most effective among many different ways to solve a problem.*
3. *An algorithm shouldn't have computer code. Instead, the algorithm should be written in such a way that, it can be used in similar programming languages.*

Step 1: Start
Step 2: Declare variables a,b and c.
Step 3: Read variables a,b and c.
Step 4: If a>b
         If a>c
           Display a is the largest number.
         Else
           Display c is the largest number.
      Else
        If b>c
          Display b is the largest number.
        Else
          Display c is the greatest number.
Step 5: Stop

Flowchart:

1. Flowchart is a diagrammatic representation of an algorithm. Flowchart are very helpful in writing program and explaining program to others.
2. Different symbols are used for different states in flowchart, For example: Input/Output and decision making has different symbols.
3. The table below describes all the symbols that are used in making flowchart

Symbol	Purpose	Description
→	Flow line	Used to indicate the flow of logic by connecting symbols.
(oval)	Terminal(Stop/Start)	Used to represent start and end of flowchart.
(parallelogram)	Input/Output	Used for input and output operation.
(rectangle)	Processing	Used for airthmetic operations and data-manipulations.
(diamond)	Desicion	Used to represent the operation in which there are two alternatives, true and false.
(circle)	On-page Connector	Used to join different flowline
(pentagon)	Off-page Connector	Used to connect flowchart portion on different page.

Q 2 Find the value of P, Q, R:

$(5167.73)_{10} = (P)_2 = (Q)_{16} = (R)_8$

Solution:

a.] $(5167 \cdot 73)_{10} = (P)_2$

Step-I: Integer Portion

← Remainder

2	5167	1
2	2583	1
2	1291	1
2	645	1
2	322	0
2	161	1
2	80	0
2	40	0
2	20	0
2	10	0
2	5	1
2	2	0
2	1	1
	0	

$(5167)_{10} =$

$(1010000101111)_2$

Step-II Fractional Portion

0.73
× 2

1 ← ①·46
× 2
0 ← ⓪·92
× 2
1 ← ①·84
× 2
1 ← ①·68
× 2
1 ← ①·36
× 2
0 ← ⓪·72
× 2
1 ← ①·44

$(0 \cdot 73)_{10} =$

$(\cdot 1011101)_2$

$(5167)_{10} = (1010000101111)_2$

$(0 \cdot 73)_{10} = (0 \cdot 1011101)_2$

$(5167 \cdot 73)_{10} = (1010000101111 \cdot 1011101)_2$

b.

$$(101000010\,1111 \cdot 1011101)_2 = (?)_{16}$$

$16 = 2^4 \rightarrow$ Group of 4 bit

$$\underbrace{0001}_{1}\ \underbrace{0100}_{4}\ \underbrace{0010}_{2}\ \underbrace{1111}_{F} \cdot \underbrace{1011}_{B}\ \underbrace{1010}_{A}$$

$$(142F \cdot BA)_{16}$$

c.

$$(101000010\,1111 \cdot 1011101)_2 = (?)_8$$

$8 = 2^3 \rightarrow$ Group of 3 bit

$$\underbrace{001}_{1}\ \underbrace{010}_{2}\ \underbrace{000}_{0}\ \underbrace{101}_{5}\ \underbrace{111}_{7} \cdot \underbrace{101}_{5}\ \underbrace{110}_{6}\ \underbrace{100}_{4}$$

$$(12057 \cdot 564)_8$$

Q 3 WAP to check that entered no is prime or not.

Solution:

```c
#include<stdio.h>
#include<conio.h>
void main()
{
  int x,i=2,flag=0;
  clrscr();
  printf("Enter no : ");
  scanf("%d",&x);
  while(i<x)
     {
         if(x%i==0)
             {
             flag=1;
              break;
             }
             i++;
     }
 if(flag==0)
       printf("\n%d is  prime no.",x);
  else
       printf("%d is not prime",x);
getch();
}
```

Q 3 WAP to check that entered no. is Armstrong or not.

Solution:

```
#include<stdio.h>
#include<math.h>
#include<conio.h>
void main()
{
 int sum=0,n,r,p,count=0;   clrscr();
 printf("enter no.");
 scanf("%d",&n);
 p=n;
 while(n>0)
        {       n=n/10;
                count++;
        }
 n=p;
 while(n>0)
        {       r=n%10;
                sum=sum+pow(r,count);
                n=n/10;
        }
 if(sum==p)
        printf(" %d is Armstrong",k);
 else
        printf("Not Armstrong");
getch();
}
```

Q 4 WAP to Calculate (1) + (1*2) + (1*2*3) + (1*2*3*4) + ...n terms

Solution:

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int i,j,n,sum=0,mul;           clrscr();
printf("enter the value of n:\n");
scanf("%d",&n);
 for(i=1;i<=n;i++)
{
    for(j=1,mul=1;j<=i;j++)
    {
      mul=mul*j;
    }
    sum=sum+mul;
  }
  printf("Sum: %d",sum);
getch();
}
```