Week: 3

> **3) a). Write a C program to check whether given number is perfect number or Not**

AIM: To Check whether given number is perfect number or not

Algorithm:
Perfect number
Step 1: read n
Step 2: assign i=1,sum=0
Step 3: while(i<n) goto step 4

Step 4: if(n%i==0)
         sum=sum+i
          i++
step 5: if(sum==n) print given number is perfect number otherwise not a perfect number.

Program:

```c
#include<stdio.h>
int main()
{
  int n,i=1,sum=0;

  printf("Enter a number: ");
  scanf("%d",&n);

  while(i<n)
{
      if(n%i==0)
      sum=sum+i;
       i++;
 }
  if(sum==n)
    printf("%d is a perfect number",i);
  else
    printf("%d is not a perfect number",i);

  return 0;
}
```

Input:

Enter a number:6

Output:

6 is a perfect number

3) b) Write a C program to check whether a number is strong number or not.

AIM: To check whether given number is strong number or not
Algorithm:
Strong number
Step 1:read num,i,f,r,sum=0,temp

Step 2: assign num to temp

Step 3: while(num) goto step 4

Step 4: i=1,f=1

 r=num%10

 while(i<=r) goto step 5

Step 5: f=f*i

 i=i+1

Step 6: sum=sum+f;

Step 7: num=num/10;

Step 8: if sum and temp are equal got step 9

Step 9: print strong number otherwise not a strong number

Program:

```
#include<stdio.h>
int main() {
        int num,i,f,r,sum=0,temp;
        printf("Enter a number: ");
        scanf("%d",&num);
        temp=num;
        while(num) {
                i=1,f=1;
                r=num%10;
                while(i<=r) {
                        f=f*i;
                        i++;
                }
                sum=sum+f;
                num=num/10;
        }
        if(sum==temp)
            printf("%d is a strong number",temp); else
            printf("%d is not a strong number",temp);
        return 0;
}
```

Input:
Enter a number:145

Output:

145 is a strong number

Record at least 3 results

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Week: 4

> **4) a) Write a C program to find the roots of a quadratic equation.**

AIM: To find the roots of a quadratic equation.

Description: roots of quadratic equation are $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

ALGORITHM:

Step 1: Start
Step 2: Read a,b,c
Step 3: calculate disc = b*b-4*a*c
Step 4: if(disc>0)
         Begin
Step 5: root1=(-b+sqrt(disc))/(2*a)
Step 6: root2=(-b-sqrt(disc))/(2*a)
Step 7: Print "Root1" , "Root2"
        End
Step 8: else if(disc=0)
        Begin
Step 9: root1=-b/(2*a)
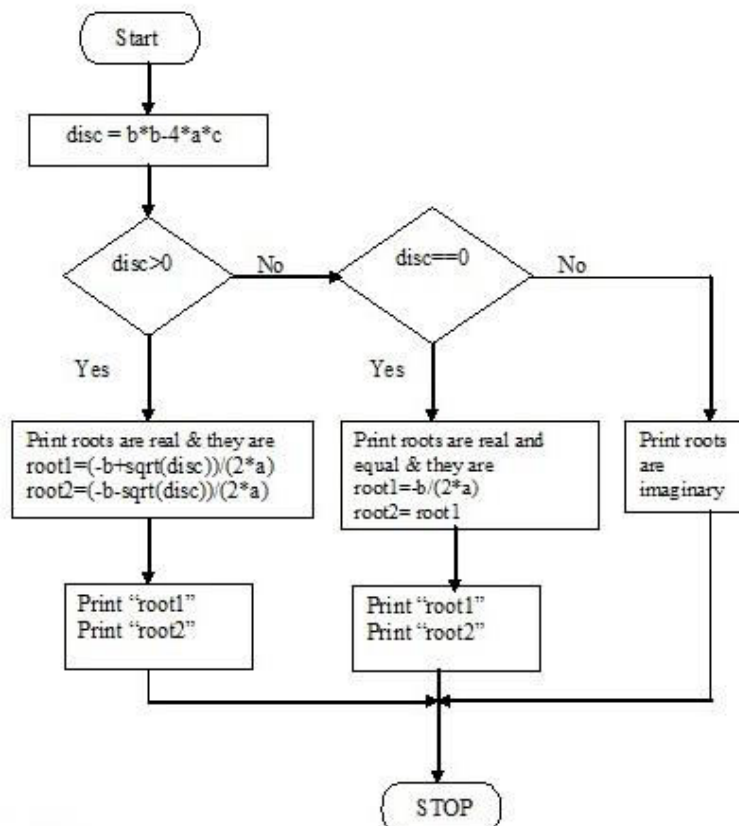Step 10: root2=root1;
Step 11: Print "Root1" , "Root2"
        End
Step 12: else
Step 13: Print Roots are imaginary
Step 14: Stop

Flow Chart

PROGRAM:

```c
#include<stdio.h>
#include<conio.h>
#include<math.h>
int main()
{
int a,b,c;
float disc,root1,root2;
float img,real;
printf("ENTER VALUES FOR a,b,c:\n");
scanf("%d%d%d",&a,&b,&c);
disc=(float)b*b-4*a*c;
if(disc>0)
{       printf("THE ROOTS ARE REAL & UNEQUAL:\n");
        root1=(-b+sqrt(disc))/(2*a);
        root2=(-b-sqrt(disc))/(2*a);
        printf("Root1=%f\n",root1);
        printf("Root2=%f\n",root2);
}
else if(disc==0)
{
                printf("THE ROOTS ARE REAL AND EQUAL:\n");
                root1=-b/(2*a);
                root2=root1;
                printf("Root1=%f\n",root1);
                printf("Root2=%f\n",root2);
}
    else
    {  printf("THE ROOTS ARE IMAGINARY:\n");
       disc=-disc;
       img=(float)disc/2*a;
       real=(float)-b/2*a;
       if (img>0)
       {       printf("Root1=%f + i%f\n",real,img);
               printf("Root2=%f - i%f\n",real,img);
       }
       else
       {       img=-img;
       printf("Root1=%f + i%f\n",real,img);
       printf("Root2=%f - i%f\n",real,img);
       }

  }
return 0;
}
```

INPUT:
ENTER VALUES FOR a,b,c
1   4   4
OUTPUT:
THE ROOTS ARE EQUAL AND THEY ARE..   Root1=-2   Root2=-2

Record at least 3 results

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4) b). Write a C program which takes two integer operands and one operator from the user, performs the operation and then prints the result.(Consider the operators +,-,*,/,% and use Switch Statement.)

AIM:
To perform arithmetic operations using switch statement.

Algorithm:
Step 1: Read a,b
Step 2: Print "Menu Options"
Step 3: do
Begin Step 4: Read ch
Step 5: switch(ch)
Begin Step 6:
case 1:
      Begin
      Calculate c = a+b
      Print "c"
      break;
      End
case 2:
      Begin
      Calculate c = a-b
      Print "c"
      break;
      End
case 3:
      Begin
      Calculate c = a*b
      Print "c"
      break;
      End
case 4:
      Begin
      Calculate c = a/b
      Print "c"
      break;
      End
case 5:
      Begin
      Calculate c = a%b
      Print "c"
      break;
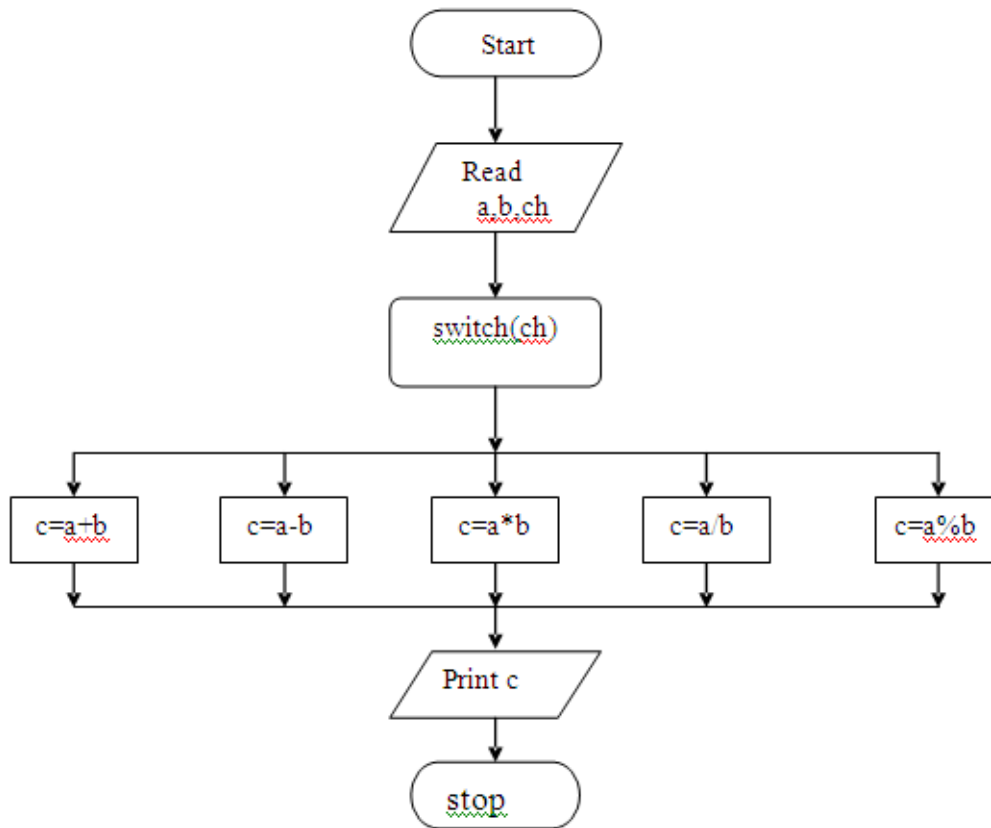   End
default:
      Print "Invalid choice"

End

Flowchart

Program:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,c,ch; clrscr();
printf("ENTER TWO VALUES FOR a & b\n"); scanf("%d %d",&a,&b);
while(1) {
printf("MENU OPTIONS \n");
printf("************\n");
printf("1.Addition\n");
printf("2.Subtraction\n");
printf("3.Multiplication\n");
printf("4.Division\n");
printf("5.Modulus\n");
printf("6.Exit\n");
printf("\n");
printf("ENTER UR CHOICE\n");
scanf("%d",&ch);
switch(ch) {
```

```
case 1: c=a+b;
printf("The addition of %d and %d is..%d\n",a,b,c); break;
case 2: c=a-b;
printf("The subtraction of %d and %d is..%d\n",a,b,c); break;
case 3: c=a*b;
printf("The multiplication of %d and %d is..%d\n",a,b,c); break;
case 4: c=a/b;
printf("The division of %d and %d is..%d\n",a,b,c); break;
case 5: c=a%b;
printf("The modulus of %d and %d is..%d\n",a,b,c); break;
case 6:exit(0); default:printf("INVALID CHOICE\n"); }
}
getch();
}
```

INPUT:
ENTER TWO VALUES FOR a & b: 20   16

OUTPUT:

MENU OPTIONS
1.Addition 2.Subtraction 3.Multiplication 4.Division 5.Modulus
6.Exit

ENTER UR CHOICE 1
The addition of 20 and 16 is..36

Record at least 3 results

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