C-Programming

Practical: 1

Aim: Programs to understand the basic datatypes I/O.

Source Code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int roll;
    char name[30];
    long int mob;
    float per;
    char grade;
    char add[50];
    clrscr();
    printf("******* Demonstration of Datatypes*****");
    printf("\n Enter the Roll no. : ");
    scanf("%d", &roll);
    printf("Enter the name of student:");
    Scanf("%s", and name);
    printf("Enter the grade:");
    Scanf("%c", &grade);
    printf("Enter the mobile number");
    Scanf("%s, mob);
    printf("Your roll number is: %s", roll);
    printf("\n Name of the student is: %s", name);
}getch();
```

Output:

* * * * Demonstration of Datatypes * * * *

Enter the Roll No: 1774

Enter the name: Pushpraj Singh

Enter your mobile no: 9833440010.

Your Roll no is: 1774

Name of student is: Pushpraj

Aim.-

(b) WAP to find the area of circle.

Source code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
  float radius, area;
  clrscr();
  printf("Enter radius: \n");
  scanf("%f", &radius);
  area = 3.14 * radius * radius;
  printf("area of circle is %f\n", area);
  getch();
{
```

Output:

Enter radius: 4

Area of circle is: 50.24

11/12/19

Practical: 2

A.)

Aim: Write a C program which will show the use of various different types of operators.

#Arithmetic Operators

Source CODE:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int num1, num2, add, sub, mul, div;
    clrscr();
    printf("Enter 1st number:");
    scanf("%d", &num1);
    printf("Enter 2nd number:");
    scanf("%d", &num2);
    add = num1+num2;
    printf("Addition of 2 numbers: %d\n", add);
    sub = num1-num2;
    printf("Subtraction of 2 numbers: %d\n", sub);
    mul = num1*num2;
    printf("Multiplication of 2 numbers: %d\n", mul);
    div = num1/num2;
    printf("Division of 2 numbers: %d", div);
    getch();
}
```

OUTPUT:

Enter 1st number: 10
Enter 2nd number: 5

Addition of two number: 15
Subtraction of two number: 5
Multiplication of two number: 50
Division of two numbers: 2

Logical Operators

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int x, y, z, value1, value2, value3, value4, value5;
    clrscr();
    printf("Enter 1st value :");
    scanf("%d", &x);
    printf("Enter 2nd value :");
    scanf("%d", &y);
    printf("Enter 3rd value :");
    scanf("%d", &z);
    value1 = (x<y) && (z>y);
    printf("value 1 is : %d \n", value1);
    value2 = (x=y) && (z<y);
    printf("value 2 is : %d \n", value2);
    value3 = (x<y) || (z=y);
    printf("Value 3 is : %d \n", value3);
    value4 = !(x==y);
    printf("value 4 is : %d \n", value4);
    value5 = (x==y);
    printf("value 5 is : %d ", value5);

    getch();
}
```

OUTPUT:

Enter 1st value: 9
Enter 2nd value: 8
Enter 3rd value: 2

Value 1 is: 0
Value 2 is: 1
Value 3 is: 1
Value 4 is: 0
Value 5 is: 1

Ternary Operators

```
#include <conio.h>
#include<stdio.h>
Void main()
{
   int a =100, b=20, c=50, big;
   clrscr();
   big = a>b && a>c? a: b;
   printf("The biggest number is: %d", big);
   getch();
}
```

OUTPUT:

The biggest number is: 100.

Practical: 3

Aim: Decision Statements

Q.) WAP to find out odd and even number.

Algorithm:

Step 1: Start
Step 2: Take input; Read a number from the user
Step 3: Check if number % 2 == 0 then
print Even number or print odd number.
Step 4: EXIT.

Source Code:

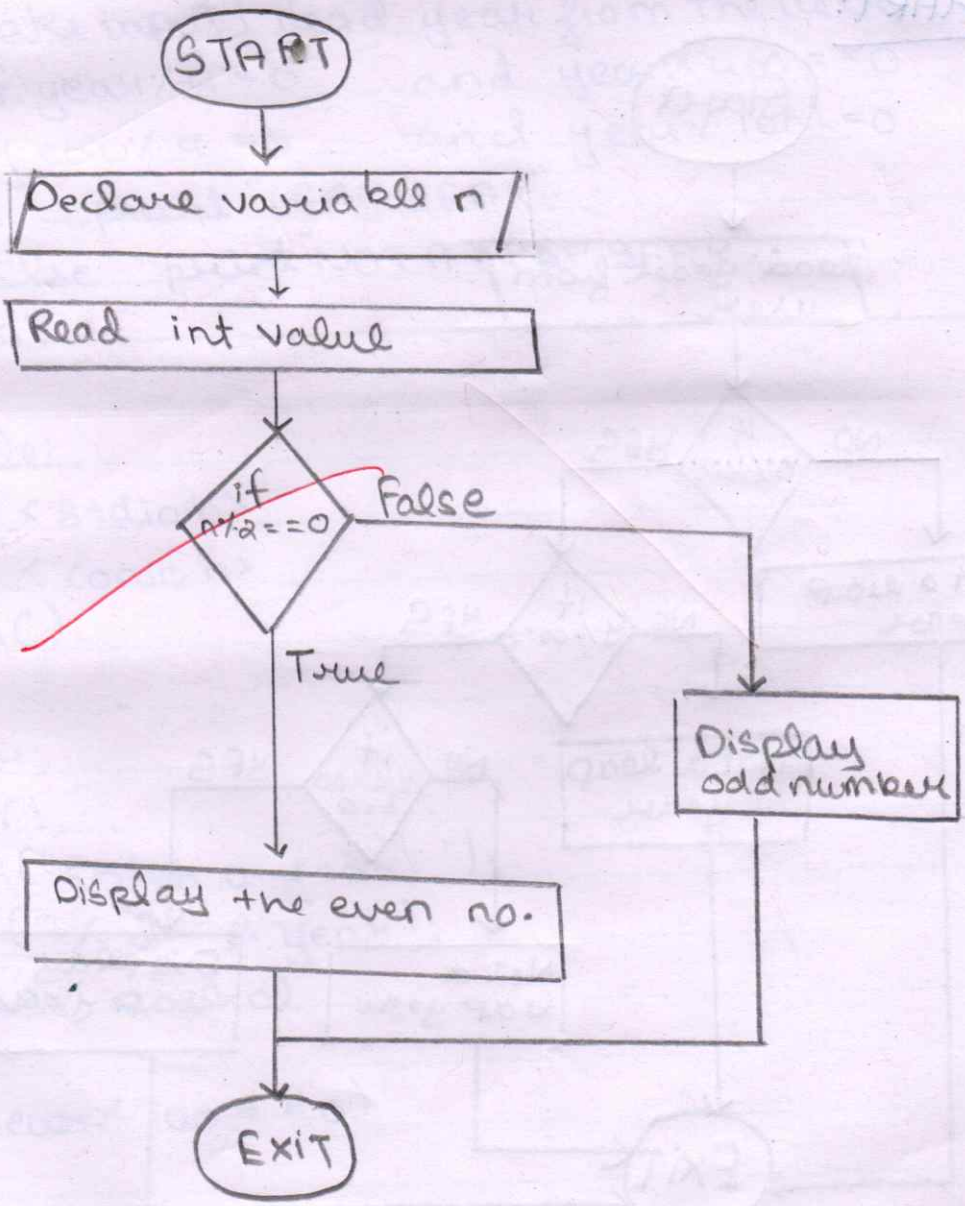
```
#include <stdio.h>
#include <conio.h>
Void main()
{
  int n;
  clrscr();
  printf("Enter a number: ");
  scanf("%d", &n);
  if(n%2==0);
  {
    printf("Even number: ");
  }
  else;
  {  printf("odd number: ");
  }
```

OUTPUT:

Enter a number: 20
Even number.

Enter a number: 17
Odd number.

FLOWCHART:



Q.) WAP to find the entered year is a leap year or not.

Algorithm:

Step 1: Start
Step 2: [Take input] Read year from the user.
Step 3: if year % 4 = 0 and year % 400 == 0
year % 4 = 0 and year % 100 != 0
print "LEAP YEAR".
Else print "NOT A LEAP YEAR".
Step 4: EXIT

Source Code:

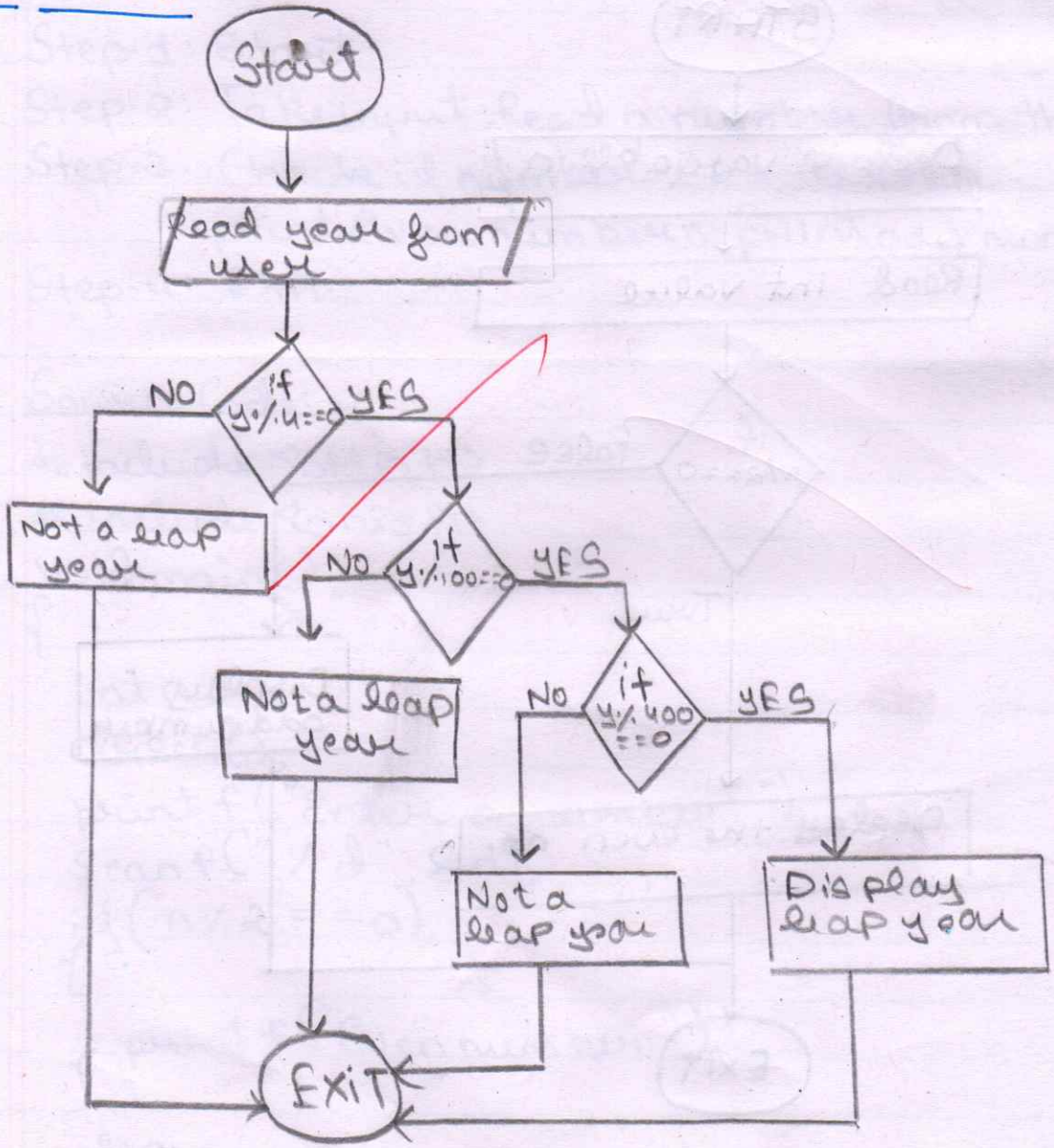
```
#include <stdio.h>
#include <conio.h>
Void main()
{
  int year;
  clrscr();
  printf("Enter a year: ");
  Scanf("%d" & year);
  if(year % 4 == 0)
{
   if(year % 100 == 0)
   {
     if(year % 400==0)
     {
       printf("LEAP YEAR")
     }
```

OUTPUT:

Enter a year : 2017
NOT A LEAP YEAR

Entea a year : 2020
leap year.

FLOWCHART:



```
        else
        {
            printf("NOT a Leap year")
        }
    }
    else
    {
        printf("NOT A LEAP Year")
    }
}
else
{
    printf("NOT A LEAP YEAR")
}
getch();
}
```

Q.) WAP to find whether the character is vowel or consonant.

Algorithm:

Step-1: Start
Step-2: [Take Input] Read characters values from user
Step-3: [Check] if value == 'a' || value == 'e' ||
value == 'i' || value == 'o' || value == 'u' ||

value = "A" || value = 'E" || value = "i" ||
value = "o" || value = "U".

Step 4: EXIT

Source Code:

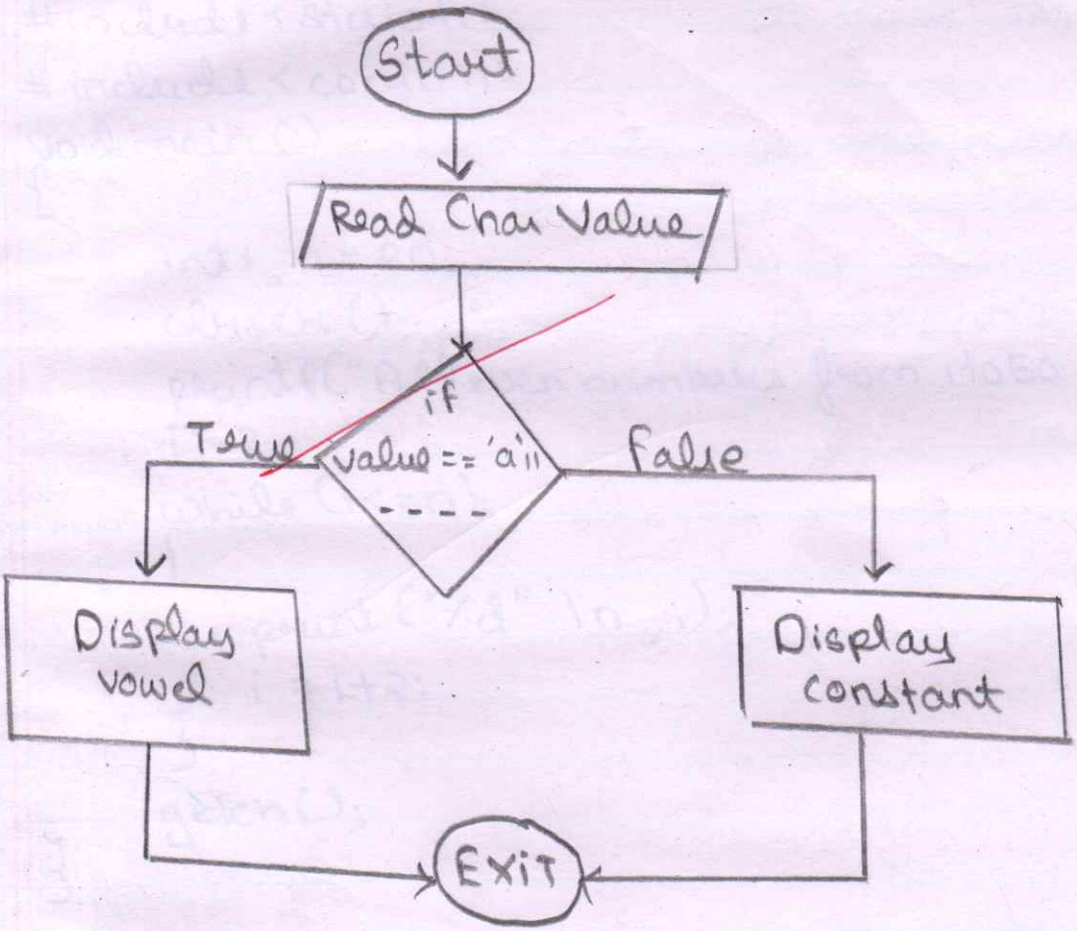
```
#include <stdio.h>
#include <conio.h>
void main()
{
   char a;
   clrscr();
   printf("Enter the alphabet:");
   scanf("%c", &a);
   if (a=='a' || a=='e' || a=='i' || a=='o' || a=='u' || a=
      a=='E' || a=='i' || a=='o' || a=='U')
   {
     printf("VOWEL");
   }
   else
   {
     printf ("consonant");
   }
   getch();
}
```

OUTPUT:

Enter a alphabet : A
Vowel

Enter a alphabet : x
Consonant

FLOWCHART:



Practical: 4

Aim: Write a program to print even number between 1-50 using while loop.

Source Code:

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i, n=20;
    clrscr();
    printf("All even numbers from 1 to 50 are: \n");
    i=2;
    while(i<=n);
    {
        print("%d" \n, i);
        i = i+2;
    }
    getch();
}
```

OUTPUT:

All even numbers from 1 to 50 are:

2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50.

Algorithm:

Step 1: Start

Step 2: Initialize two variable with static variable where n=50 & i=2.

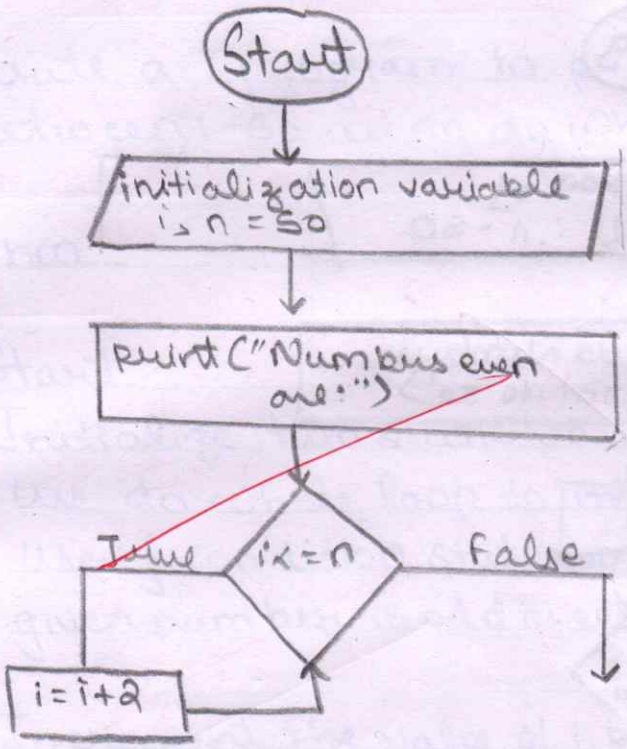
Step 3: Use while loop for printing the even numbers upto range 50.

Step 4: Adding 2 to current even numbers will give next even number.

Step 5: Display the appropriate output.

Step 6: EXIT.

FLOWCHART:


Start
initialization variable
i, n = 50
print("Numbers even
are:")
i<=n
True
False
i=i+2

b) Aim: Write a C program to print odd numbers between 1-50 using do while loop.

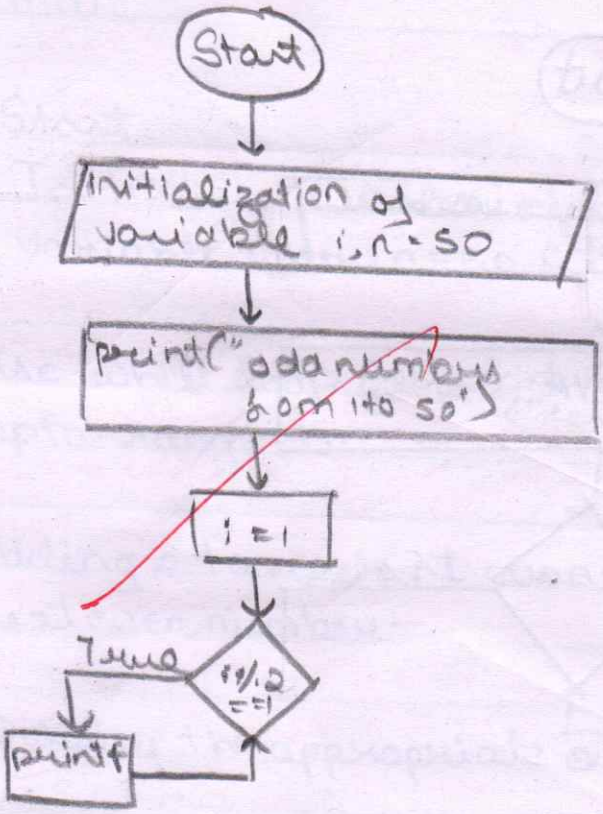
Algorithm:

Step 1: Start
Step 2: Initialize two static variable n=50, i=1
Step 3: Use do while loop to iterate from 1 to 50.
Step 4: Use if condition statement to check whether given number is odd or even.
Step 5: Increment the value of i by 1.
Step 6: Display the appropriate output.
Step 7: Stop.

Source Code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int i, n=50;
    clrscr();
    printf("Odd numbers from 1 to 50 are: \n", n);
    i=1;
    do
    {
        if(i%2==1)
        {
```

FLOWCHART: 38



```
        printf("%d\n", i);
    }
    i++;
}
while(i<=n);
getch();
}
```

OUTPUT:

Odd numbers from 1 to 50 are:

1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
35
37
39
41
43
45
47
49

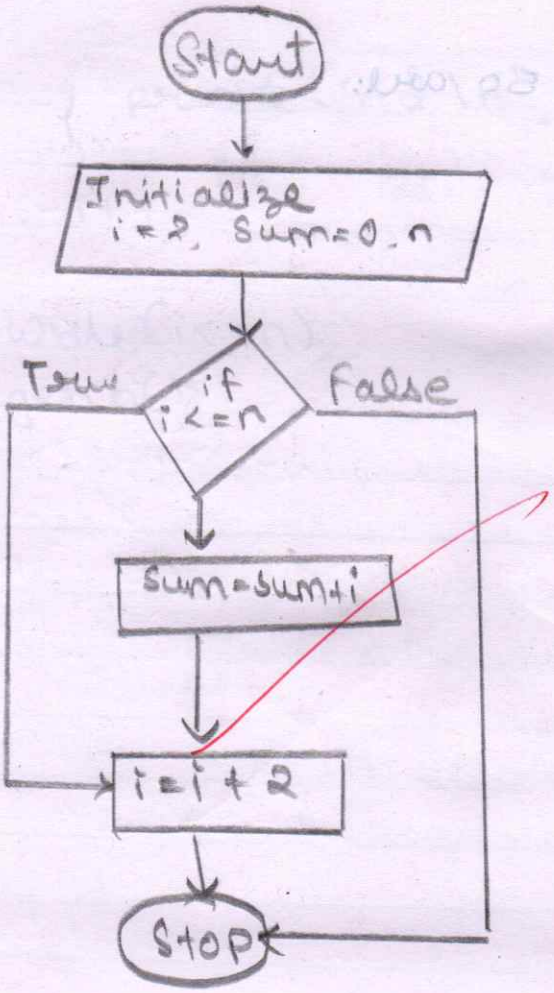
c) Aim: Write a C program to print sum of all even number between 1 to n using for loop.

Algorithm:

Step-1: Start
Step-2: Initialize three variable from these two is static one is dynamic
i = 2; sum = 0; n;
Step-3: Use for loop for check the even numbers and print upto the given range.

Step-4: Add current even number to sum.
Step-5: Display the appropriate output.
Step-6: Stop.

FLOWCHART:



Source Code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
  int i, n, sum=0;
  clrscr();
  printf("Enter the range:");
  scanf("%d", &n);
  for(i=2; i<=n; i=i+2)
  {
    sum=sum+i;
  }
  printf("Sum of all even numbers upto the ran
  getch();
}
```

OUTPUT:

Enter the range: 10

Sum of all even numbers upto the range are: 30.

05/02/2020

Practical: 5

A) Aim:- Write a C program to print the input array elements.

Source Code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[20];
    int size,i;
    clrscr();
    printf("Enter number less than 20:");
    scanf("%d",&size);
    for(i=0;i<size;i++)
    {
      printf("Enter number less than 20:");
      scanf("%d",&size);
    }
     printf("\n the displayed array \n:");
     for(i=0;i<size,i++)
     {
       printf("Enter a[%d]%d",i);
     }
      getch();
}
```

Output:

Enter the number less than 20:5
Enter the a[0] no. of element 5
Enter the a[1] no. of element 2
Enter the a[2] no. of element 4
Enter the a[3] no. of element 1
Enter the a[4] no. of element 8.

The displayed array:

Enter a[0]5
Enter a[1]2
Enter a[2]4
Enter a[3]1
Enter a[4]8

Algorithm:

Step1 Start

Step 2 Declare an array of user specified size.

Step 3 Initialize two variables of integer type i.e size and i

Step 4: Take range from the user that to be printed which should be less than the specified size of an array.

Step 5: Use Nested for conditional loop for printing the elements in array.

Step 6: STOP.

B) Aim: To find the sum of elements of the arrays.

Source Code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[20], sum=0, size, i;
    clrscr();
    printf("Enter no. less than 20:");
    scanf("%d", &size);
    for(i=0; i<size; i++)
    {
      printf("Enter a[%d] no. of element", i);
      scanf("%d", &a[i]);
    }
    printf("\n the displayed array\n:");
    for(i=0; i<size; i++)
    {
        sum = sum+a[i];
    }
    printf("Sum of the arrays : [%d]", sum);

    getch();
}
```

OUTPUT:

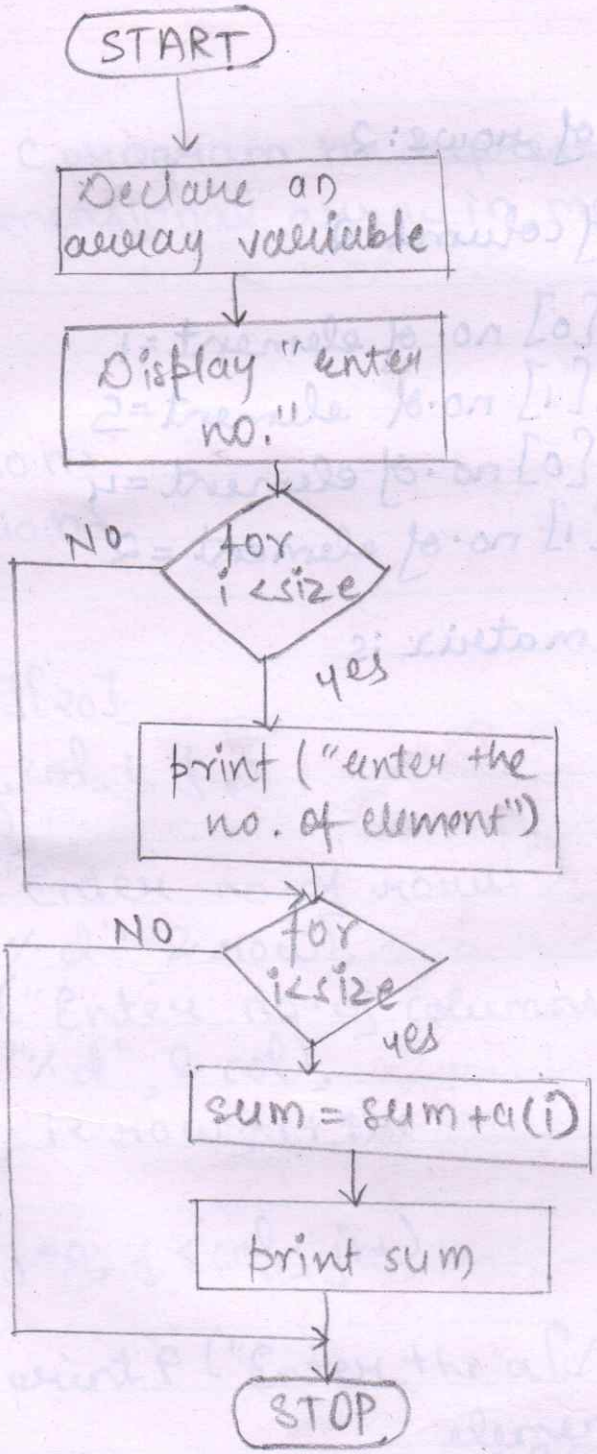
Enter the number less than 20: 5

Enter the a[0] no. element 2
Enter the a[1] no. element 3
Enter the a[2] no. element 1
Enter the a[3] no. element 2
Enter the a[4] no. element 3

The displayed array:
Sum of the array [11]

Algorithm:

1.) Start.
2.) Declare an array of integer type of user specified size.
3.) Initialize three variable one of the static type and two of dynamic type. i.e sum=0, i, size.
4.) Take range from the user, that to be printed and add, which should be less than the specified size of an array.
5.) Use Nested for conditional loop.
6.) Adding the elements of the array.
7.) Print
8.) STOP.


START
Declare an array variable
Display "enter no."
for i<size
NO
yes
print ("enter the no. of element")
for i<size
NO
yes
sum = sum + a(i)
print sum
STOP

c) Aim: Write a C program to represent a multi dimensional array in matrix input.

Source Code:

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int a[20][20];
    int row, col, i, j, j
    clrscr();
    printf("Enter no. of rows:");
    scanf("%d" &row);
    printf("Enter no. of columns:");
    scanf("%d", &col);
    for(i=0; i<row; i++)
    {
        for(j=0; j<col; j++)
        {
            printf("Enter the a[%d][%d] no. of
                                element:", i, j);
            scanf("%d", &a[i][j]);
        }
    }
    printf("The displayed matrix is \n \n");
    for(i=0; i<row; i++)
    {
```

OUTPUT:

Enter the no. of rows: 2

Enter the no. of colums: 2

Enter the a[0][0] no. of element = 1
Enter the a[0][1] no. of element = 5
Enter the a[1][0] no. of element = 4
Enter the a[1][1] no. of element = 2

The displayed matrix is

1 5
4 2

```
        for(j=0; j<col; j++);
        {
            printf("\t%d", a[i][j]);
        }
    }
    printf("\n");
}
getch();
}
```

Algorithm:

- START
- Declare multidimensional array and row, col, i and j
- Display the no. of rows.
- Scan the same
- Similarly for columns.
- Use the for conditional for accessing the array elements
- Use another for loop for displaying the array values
- STOP

Practical: 6

functions

Aim: To accept a number from user and find factorial

Algorithm:

Step 1: Declare a function which will accept one argument as number.

Step 2: Accept a number from user to factorial of it.

Step 3: Call the declared function or defined function and pass the input entered by user using function name.

Step 4: Define the declared function and use for loop to calculate factorial of entered number and return the result to the function call statement using return function.

Q.) WAP to find factorial of a number using recursion function.

```
#include<stdio.h>
#include<conio.h>
int factorial (int n);
void main()
{
  clrscr();
  int x, fact;
  printf("\n Enter value of x: ");
  scanf("%d", &x);
  fact= factorial(x);
  printf("\n factorial of %d = %d", x, fact);
  getch();
}
  int factorial (int n)
  {
     int f;
     if (n==1)
     return(1)
     else
        f= n* factorial(n-1);
     return(f)
  }
```

OUTPUT:

Enter the value of x: 4
factorial of 4 = 24.

2) Program to find sum of digits of entered numbers:

Algorithm: Step 1: Start
Step 2: Define a function which will calculate the sum of digits.

Step 3: Take a number from user which contains at least two digits.

Step 4: Call the function defined above main function to calculate sum of digits.

Step 5: Define the body of function defined above and accept define two integer variables.

Step 6: Use the while loop and perform calculation accordingly.

Step 7: Print the value of sum so calculated.
Step 8: STOP.

Source Code:-

```
#include <stdio.h>
#include <conio.h>
void sum(int n)
void main()
{
```

OUTPUT:

```
Enter a number:
1774.
Sum of digits is:
19.
```

```
int num;
clrscr();
printf("\n Enter a number : \n");
scanf("%d", &num);
sum(num);
getch();
}

void sum(int n)
{
  int v, s = 0;
  while(n > 0)
  {
    v = n % 10
    s = s+v
    n = n/10
  }
printf("\n Sum of digits is: \n %d", s
}
```