Experiment 2

Aim

Describe the different type of constant and variables in 'C'.

Theory

Variables

Variables are memory location in computer's memory to store data. To indicate the memory location, each variable should be given a unique name called identifier. Variable names are just the symbolic representation of a memory location.

Examples of variable name: *sum*, *car no.*, *count* etc.

In C, variables can be classified as:

- Numeric variables
  Numeric variables can either be of the type integer (int) or of the type real (float). Integer (int) values are whole numbers (like 10 or -10). Real (float) values can have a decimal point in them. (Like 1.23 or -20.123).
- Character variables
  Character variables are letters of the alphabet, ASCII characters or numbers 0-9. If you declare a character variable you must always put the character between single quotes (like so 'A'). So remember a number without single quotes is not the same as a character with single quotes.

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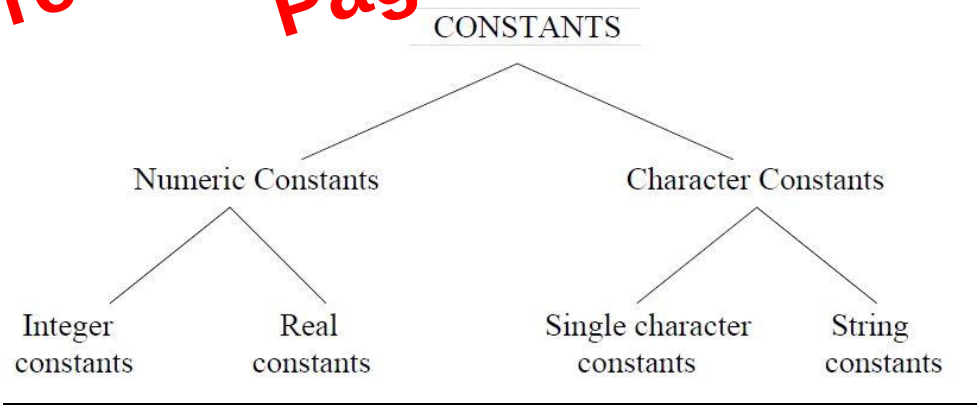
Constants

Constants are the terms that can't be changed during the execution of a program. For example: 1, 2.5, "Programming is easy." etc.



In C, constants can be classified as:

- Integer constants
  Integer constants are the numeric constants (constant associated with number) without any fractional part or exponential part. There are three types of integer constants in C language: Decimal constant (base 10), octal constant (base 8) and hexadecimal constant (base 16).

PROGRAM

```
#include<stdio.h>
#include<conio.h>
int main()
{
	int n,i;
	float x,sum,avg;
	sum=0.00;
	printf("\n Enter the number of data \n");
	scanf("%d",&n);
	printf("\n enter the data\n");
	for(i=1;i<=n;i++)
	{
		scanf("%f",&x);
		sum=sum+x;
	}
	avg=sum/n;
	printf("\n Sum of %d numbers = %f",n,sum);
	printf("\n Average of %d numbers = %f",n,avg);
	getch();
	return 0;
}
```

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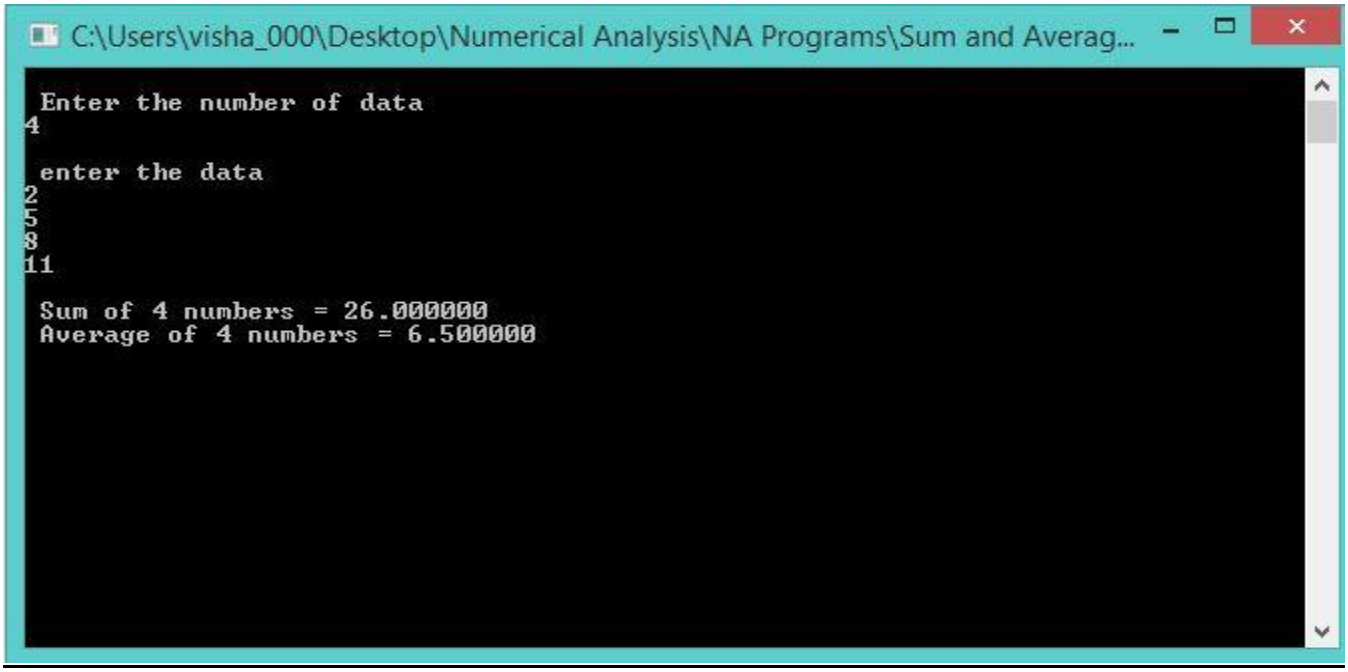
OUTPUT

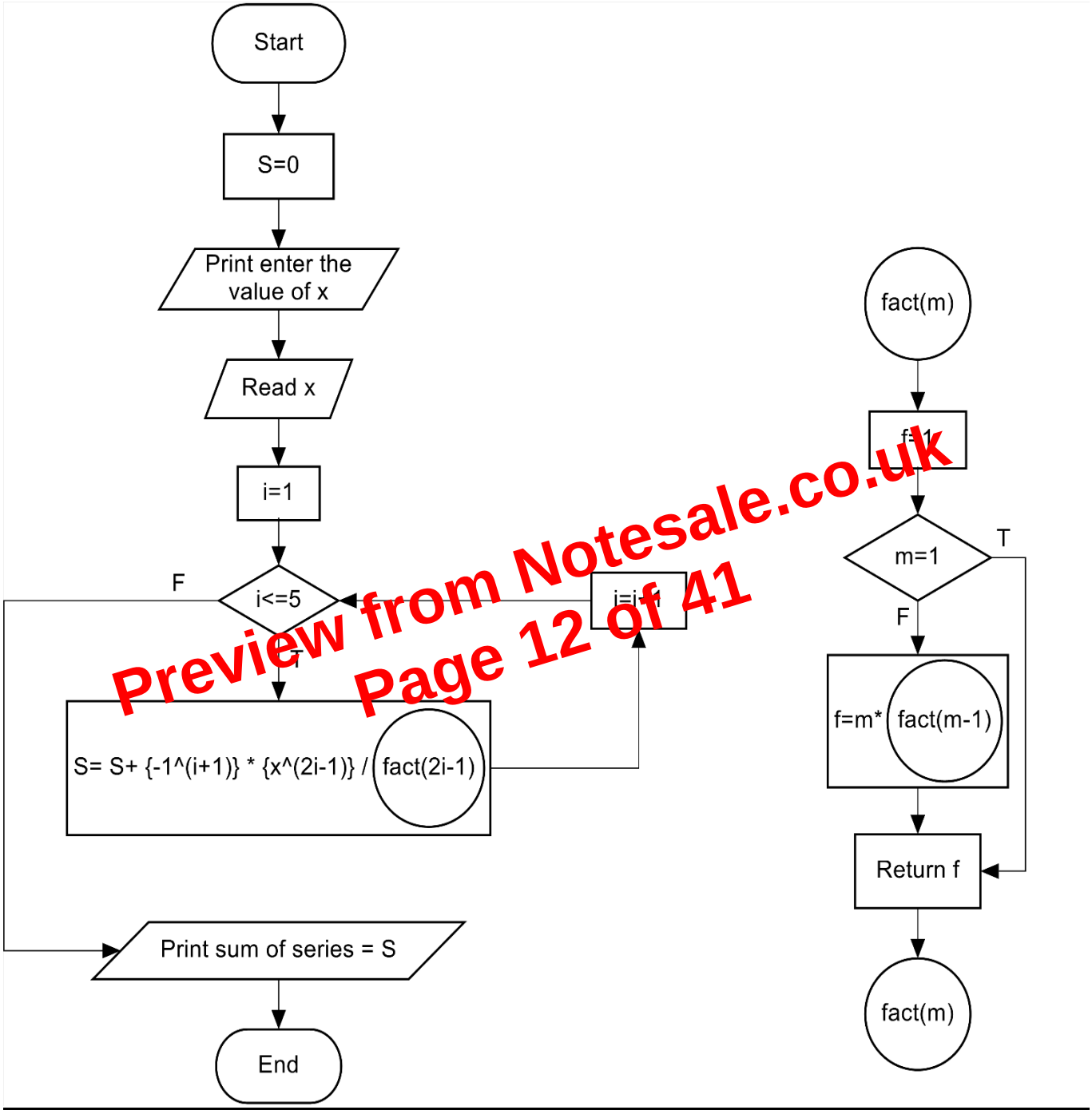


Experiment 5

Aim

To write a program in C language for finding sum of series of function ***Sin(x)*** up to 5th term.

Flowchart



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```
        }
        else
        {
                for(i=1;i<n;i+=2)
                {
                        if(i%3==0)
                        {
                                s=s+2*fx[i];
                        }

                        else
                        {
                                s=s+3*fx[i];
                        }
                }
                s=(3.0/8.0)*h*s;
                printf("\n The value of integration by 3/8 rule=%f",s);
        }
        getch();
        return 0;
}
```

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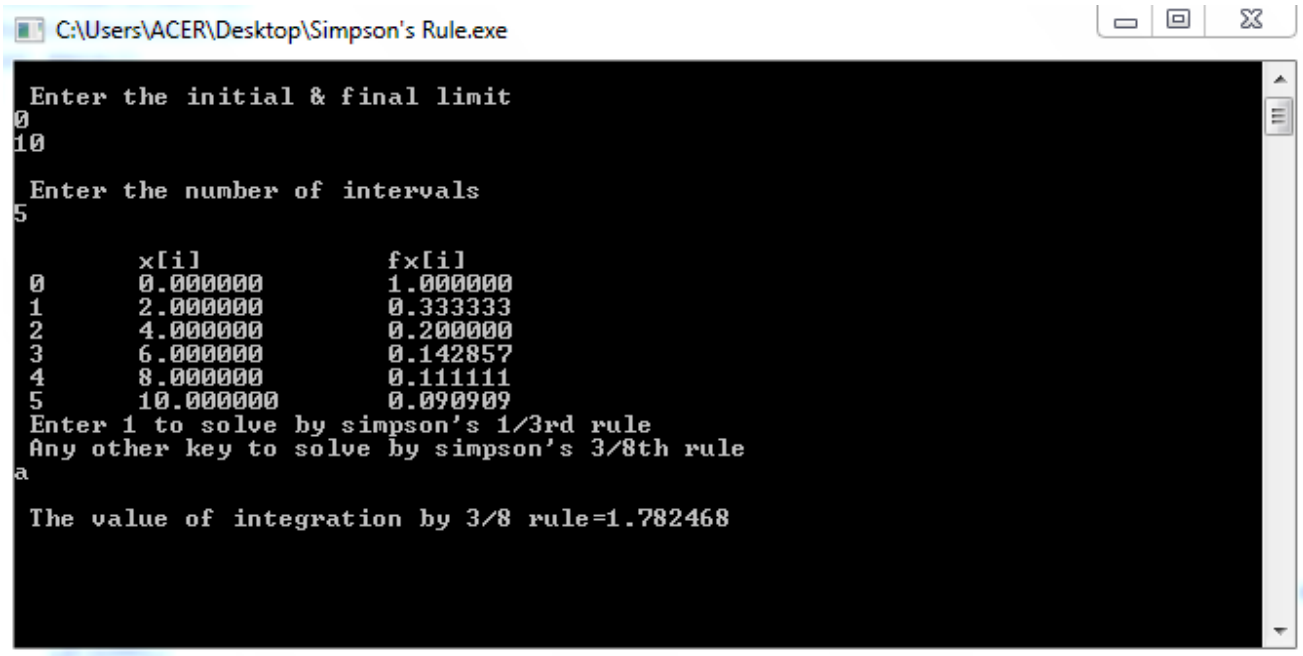
OUTPUT



PROGRAM

```
#include<stdio.h>
#include<conio.h>
int main()
{
	int n=0;
	float k1,k2,k3,k4,x,y,S,h;
	float f(float x,float y);
	printf("Enter the initial approximation of x and y \n");
	scanf("%f %f",&x,&y);
	printf("\n");
	h=0.2;
	do
	{
		S=0;
		k1=h*f(x,y);
		k2=h*f(x+(h/2),y+(k1/2));
		k3=h*f(x+(h/2),y+(k2/2));
		k4=h*f(x+h,y+k3);
		S=k1+(2*k2)+(2*k3)+k4;
		S=S/6;
		printf(" k1=%f\t k2=%f\t k3=%f\t k4=%f\n",k1,k2,k3,k4);
		x=x+h;
		y=y+S;
		printf("x=%f \t y=%f \n\n",x,y);
		n++;
	}while(n<5);
	printf("\n The approximate solution of the equation dy/dx=x+y is %f \n",y);
	return 0;
}
float f(float x,float y)
{
	return(x+y);
}
```

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PROGRAM

```
#include<stdio.h>

#include<conio.h>

int main()

{

      int n,k;

      float x,y,temp,f1,f2,S,h;

      float f(float x,float y);

      printf("Enter initial amount of radioactive substance and final value of
time(Sec) \n");

      scanf("%f %f",&y,&x);

      printf("\n");

      h=25;

      k=x/h;

      x=0;

      n=0;

      printf("time=%f \t Radioactive substance=%f \n",x,y);

      do

      {

            S=0;

            f1=f(x,y);

            temp=y+(h*f1);

            f2=f(x+h,temp);

            S=f1+f2;

            S=S*h/2;

            y=y+S;

            x=x+h;

            printf("time=%0.2f \t Radioactive substance=%f \n",x,y);

            n++;

      }while(n<k);

      printf("\n The final amount of radioactive material after time %0.2f sec is
%f \n",x,y);

      return 0;

}
```

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