C-PROGRAMMING

Date :

Exp.no: 01

Find the factorial of a given positive number using function.

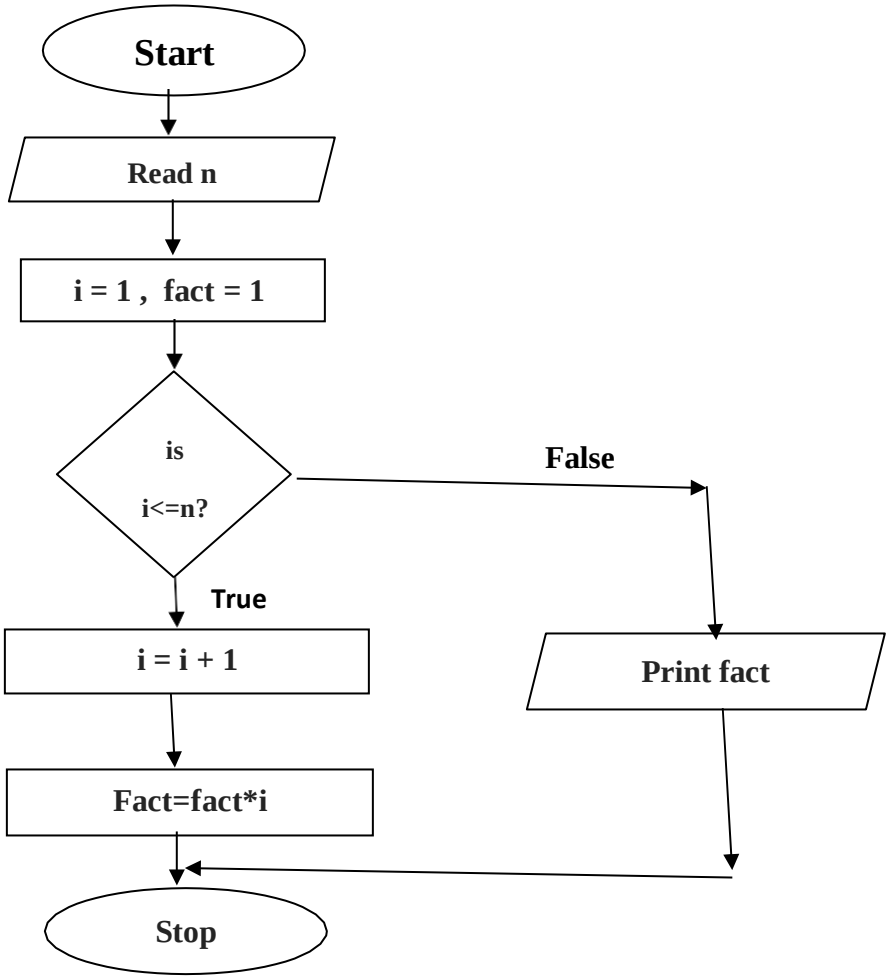
Aim :

To write a C program to calculate the factorial of a given positive number using function.

Algorithm :

Step 1: Start
Step 2: Declare Variable n, fact, i
Step 3: Read number from User
Step 4: Initialize Variable fact=1 and i=1
Step 5: Repeat Until i<=number
fact=fact*i
i=i+1
Step 6: Print fact
Step 7: Stop

Flow Chart :


Start
Read n
i = 1 , fact = 1
is
i<=n?
False
True
i = i + 1
Print fact
Fact=fact*i
Stop

Code :

```
#include<stdio.h>
#include<conio.h>
void main( )
{
int n, i, fact=1;
clrscr();
printf("Enter n");
scanf("%d ",&n);
for(i=1;i<=n ; i+1)
    {
        fact =fact*i;
    }
printf("factorial value is % d", fact);
getch( );
}
```

Output :

```
Enter n 4
factorial value is 24
```

Result :

Thus the c program to find the factorial of a given positive number using function is executed and output is verified successfully.

Date :

Exp.no: 02

Calculate X raised to Y using function.

Aim :

To write a C program to calculate X raised to Y using function.

Algorithm :

Step 1: Declare int and long variables.

Step 2: Enter base value through console.

Step 3: Enter exponent value through console.

Step 4: While loop.

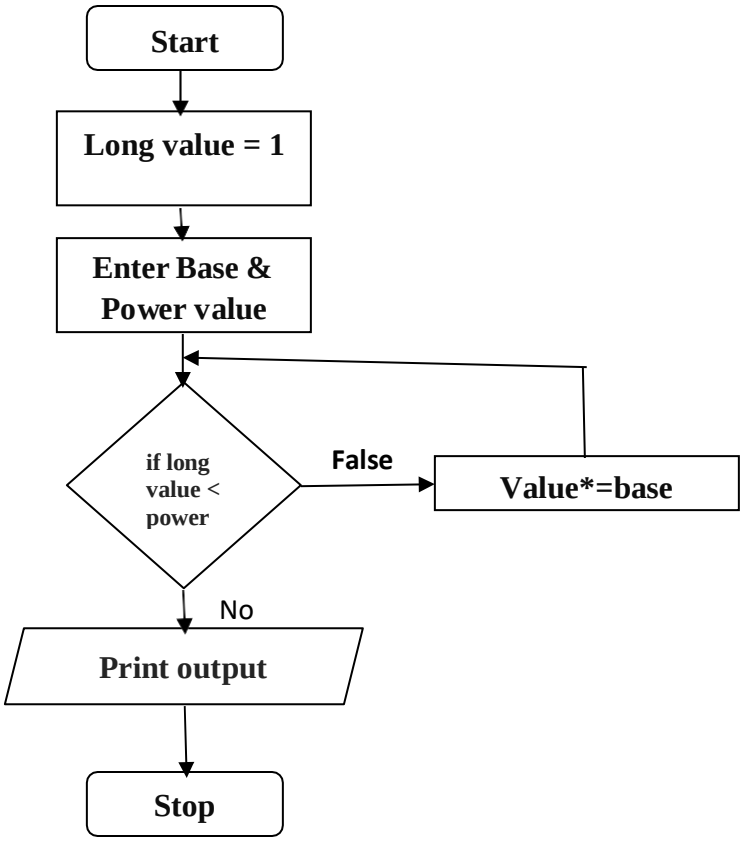
Exponent !=0

Value *=base

–exponent

Step 5: Print the result.

Flow chart :


Start
Long value = 1
Enter Base & Power value
if long value < power
False
Value*=base
No
Print output
Stop

Code :

```
#include <stdio.h>
#include<conio.h>
void main()
{
int base, exp;
clrscr();
long result = 1;
printf("Enter a base number: ");
scanf("%d", &base);
printf("Enter an exponent: ");
scanf("%d", &exp);
while (exp!= 0)
{
	result*= base;
	--exp;
}
printf("Answer = %ld", result);
getch();
}
```

Output :

```
Enter a base number: 3
Enter an exponent: 2
Answer = 9

...Program finished with exit code 0
Press ENTER to exit console.
```

Result :

Thus the c program to Calculate X raised to Y using function is executed and output is verified successfully.

Date :

Exp.no: 03

Find GCD and LCM of two given integer numbers using function.

Aim :

To write a C program to find GCD and LCM of two given integer numbers using function.

Algorithm :

Step-1 : Input two integer numbers.

Step-2 : Compare the two numbers, store the greater number in the numerator and the smaller number in the denominator.

Step-3 : Run the while loop until the remainder becomes „0".

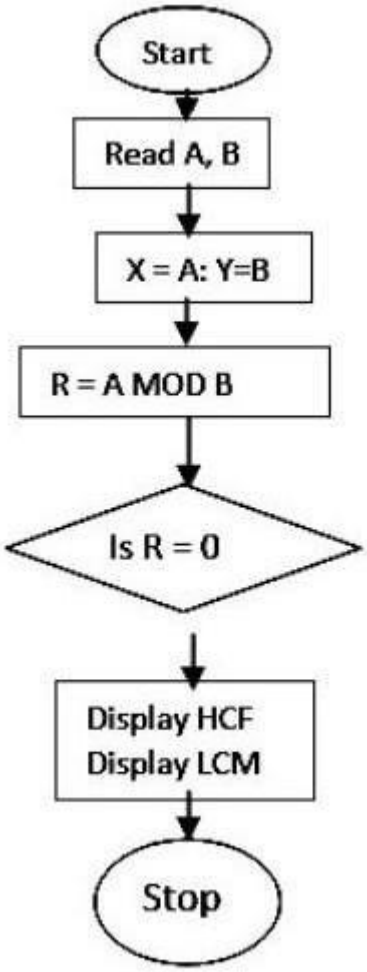
Step-4 : Inside the while loop keep on dividing the numerator by denominator and store the value in the remainder variable.

Step-5 : When the value of the remainder variable becomes „0" come out of the loop and store the value of the denominator in the GCD variable.

Step-6 : Now, calculate the lcm by the formula LCM = (num1 * num2) / GCD

Step-7 : Print the value of GCD and LCM.

Flow chart :



Code :

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n1,n1,gcd,lcm,r,n,d;
clrscr();
printf("Enter two numbers:\n");
scanf("%d%d",&n1,&n2);
if(n1>n2)
{
n=n1;
d=n2;
}
else
{
n=n2;
d=n1;
}
r=n1/n2;
while(r!=0)
{
n=d;
d=r;
r=n/d;
}
gcd=d;
```

```
lcm=n1*n2/gcd;
printf("GCD of 2 nos are %d\n",gcd);
printf("LCM of 2 nos are %d\n",lcm);
getch();
}
```

Output :

```
Enter two numbers:
10
15
GCD of 2 nos are 10
LCM of 2 nos are 15


...Program finished with exit code 0
Press ENTER to exit console.
```

Result :

Thus the c program to find GCD and LCM of two given integer numbers using function is executed and output is verified successfully.

Date :

Exp.no: 04

Find the sum of N natural numbers using function.

Aim :

To write a C program to find the sum of N natural numbers using function.

Algorithm :

Step –1 : Start

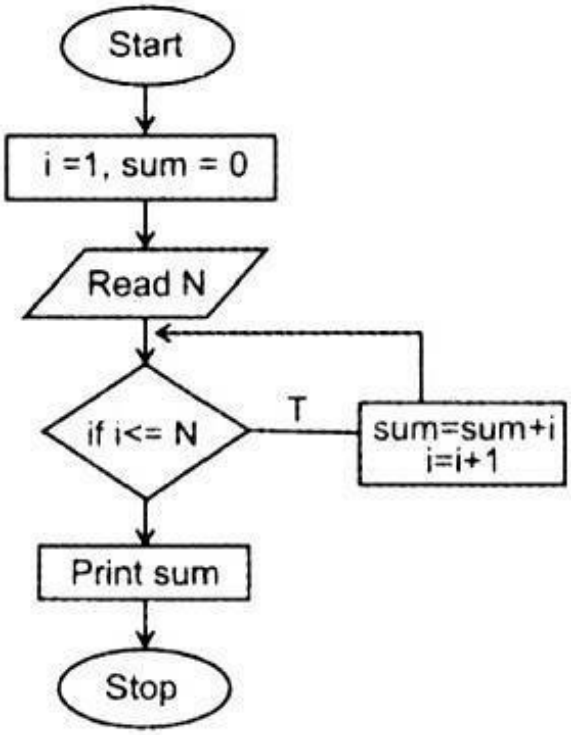
Step –2 : Declare and initialize variable, i,num, s=0.

Step –3 : Enter the value of num i.e. number upto which sum is to be calculated.

Step –4 : Print the sum

Step –5 : Stop.

Flow chart :



Code :

```
#include<stdio.h>
#include<conio.h>
void main( )
{
int num, i, sum=0;
clrscr();
printf("Enter a positive number:");
scanf("%d", & num);
      for(i=0; i<=num; i++)
     {
       sum=sum+i;
      }
printf("\n sum of the first %d number is %d",num,sum);
getch( );
}
```

Output :

```
Enter a positive number:6

 sum of the first 6 number is 21

...Program finished with exit code 0
Press ENTER to exit console.
```

Result :

Thus the c program to find the sum of N natural numbers using function is executed and output is verified successfully.

Date :

Exp.no: 05

Student information using structure.

Aim :

To write a C program to store student information using structures.

Algorithm :

Step -1 : Input structure definition.

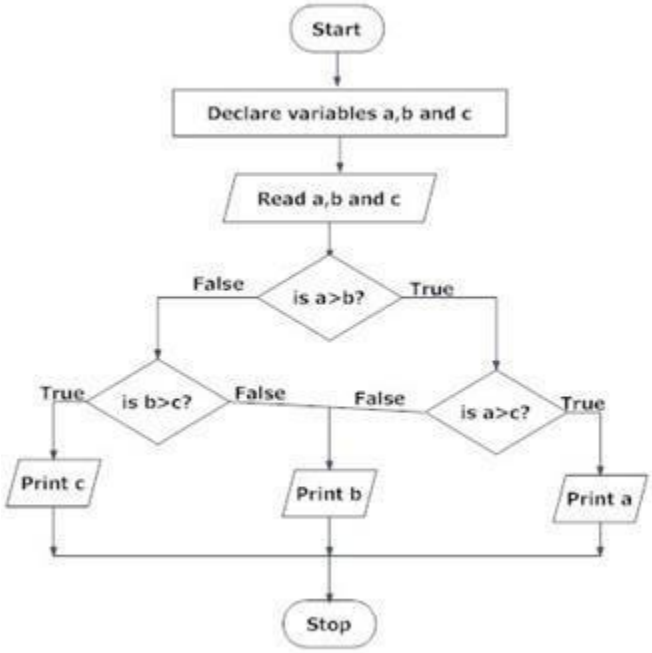
Step -2 : Enter size of the student details to be stored.

Step -3 : Enter details of each book with name, register no and marks.

Step -4 : Get the total student details.

Step -5 : Stop

Flow chart :


Start
Declare variables a,b and c
Read a,b and c
is a>b?
False
True
is b>c?
True
False
is a>c?
False
True
Print c
Print b
Print a
Stop

Code :

```
#include<stdio.h>
#include<conio.h>
struct student
{
char name[50];
int roll;
float marks;
};
void main()
{
struct student s;
clrscr();
printf("Enter info of student\n");
scanf("%s".s.name);
printf("Enter Roll no:\n");
scanf("%d",&s.roll);
printf("Enter Marks:\n");
scanf("%f",&s.marks);
printf("\n Displaying info\n");
printf("Name:%s\n",s.name);
printf("Roll No:%d\n",s.roll);
printf("Marks:%d.2f\n",s.marks);
getch();
}
```

Output :

```
Enter Name:
VAIBHAV
Enter Roll no:
02
Enter Marks:
61.99

 Displaying info
Name:VAIBHAV
Roll No:2
Marks:61.990002
```

Result :

Thus the c program to store Student information using structure is executed and output is verified successfully.

Date :

Exp.no: 06

Print the address of a variable and its value using Pointer.

Aim :

To write a C program to print the address of a variable and its value using pointer.

Algorithm :

Step -1 : A pointer is a variable that contains the address of another variable.

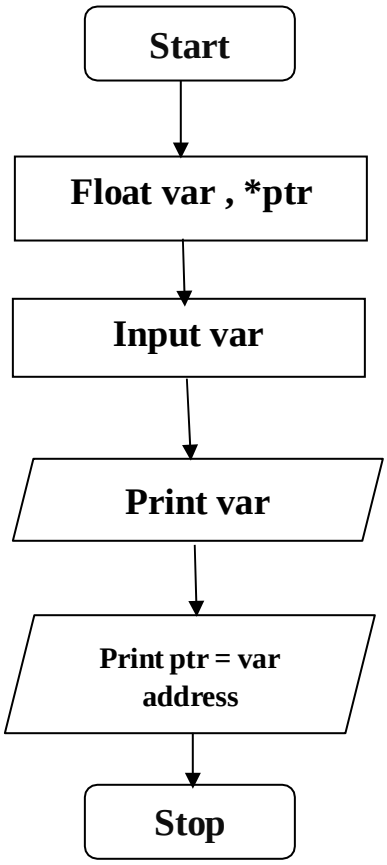
Step -2 : Pointer‟s were declared using asterisk (*) symbol.

Step -3 : Input variable var and pointer *ptr data types.

Step -4 : Enter the variable value.

Step -5 : Stop

Flow chart :


Start
Float var , *ptr
Input var
Print var
Print ptr = var address
Stop

Code :

```
#include<stdio.h>
#include<conio.h>
void main()
{
float var,*ptr;
clrscr();
var=23.32;
ptr=&var;
printf("address of var without using pointer =%u\n",&var);
printf("value of var =%f\n",*ptr);
printf("address of var using pointer =%u\n",ptr);
getch();
}
```

Output :

```
Address of var without using pointer=65522
Value of var=23.320000
Address of var using pointer=65522
>
```

Result :

Thus the c program to print the address of a variable and its value using Pointer is executed and output is verified successfully.

Date :

Exp.no: 07

Area and perimeter of a circle.

Aim :

To write a C program to find the area and perimeter of a circle.

Algorithm :

Step 1: Start

Step 2: input r

Step 3: let pi = 3.14

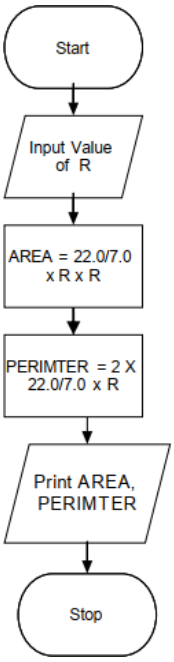
Step 4: area = pi * r * r

Step 5: Perimeter = 2 * pi * r

Step 6: print area, perimeter.

Step 7: Stop

Flow chart :


Start
Input Value of R
AREA = 22.0/7.0 x R x R
PERIMTER = 2 X 22.0/7.0 x R
Print AREA, PERIMTER
Stop

Code :

```
#include<stdio.h>
#include<conio.h>
void main( )
{
float radius, area, p;
clrscr();
printf(Enter radius of circle\n);
scanf("%f", & radius);
area=3.14*radius*radius;
printf(The area of circle is %.2f",area);
p=6.28*radius;
printf("\n The perimeter of circle is %.1f",p);
getch();
}
```

Output :

```
Enter radius of circle
3
The area of circle is 28.260000
 The perimeter of circle is 18.840000

...Program finished with exit code 0
Press ENTER to exit console.
```

Result :

Thus the c program to find area and perimeter of a circle is executed and output is verified successfully.

Date :

Exp.no: 08

Check whether the given number is palindrome or not.

Aim :

To write a C program to check whether the given number is palindrome or not.

Algorithm :

Step -1: Input a number from user.

Step -2: Store it in variable say num.

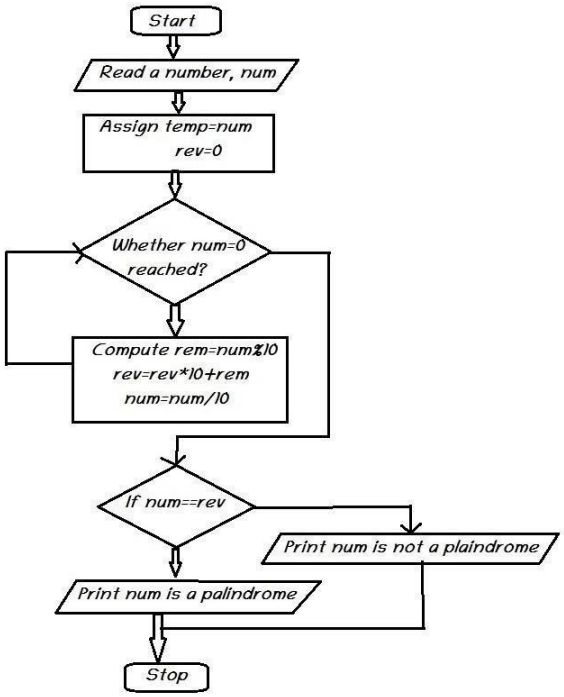
Step -3: Find reverse of the given number.

Step -4: Store it in variable say reverse.

Step -5: Compare num with reverse.

Step -6: If both are same then the number is palindrome otherwise not.

Flow chart :


Start
Read a number, num
Assign temp=num
rev=0
Whether num=0
reached?
Compute rem=num%10
rev=rev*10+rem
num=num/10
If num==rev
Print num is not a plaindrome
Print num is a palindrome
Stop

Code :

```
#include <stdio.h>
#include<conio.h>
void main()
    {
int n, reversed = 0, remainder, original;
clrscr();
printf("Enter an integer: ");
scanf("%d", &n);
original = n;
while (n!= 0)
{
remainder = n % 10;
reversed = reversed * 10 + remainder;
n /= 10;
}
if (original == reversed)
        printf("%d is a palindrome.", original);
else
        printf("%d is not a palindrome.", original);
getch();
}
```

Output :

```
Enter an integer:121
121 is a palindrome.

...Program finished with exit code 0
Press ENTER to exit console.


Enter an integer:12
12 is not a palindrome.

...Program finished with exit code 0
Press ENTER to exit console.
```

Result :

Thus the c program to check whether the given number is palindrome or not is executed and output is verified successfully.

Date :

Exp.no: 09

Check whether the given number is prime or not.

Aim :

To write a C program to check whether the given number is prime or not.

Algorithm :

Step -1: Take num as input.

Step -2: Initialize a variable temp to 0.

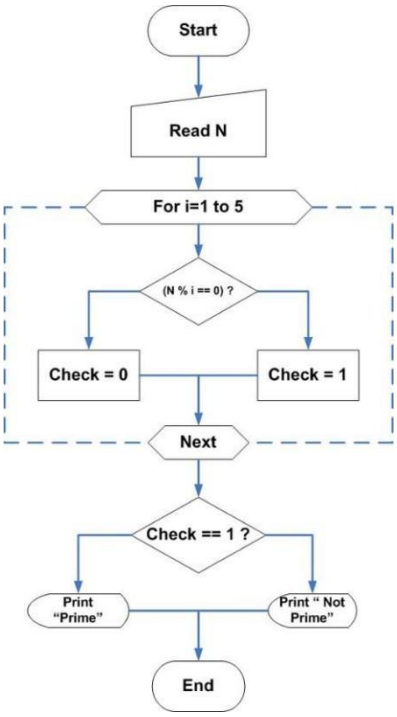
Step -3: Iterate a “for” loop from 2 to num/2.

Step -4: If num is divisible by loop iterator, then increment temp.

Step -5: If the temp is equal to 0, Return “Num is PRIME”.

Step -6: Else, Return “Num IS NOT PRIME”.

Flow chart :


Start
Read N
For i=1 to 5
(N % i == 0) ?
Check = 0
Check = 1
Next
Check == 1 ?
Print "Prime"
Print " Not Prime"
End

Code :

```
#include<stdio.h>
#include<conio.h>
void main( )
{
int n, k, flag=0, i;
clrscr();
printf("Enter n");
scanf("%d",&n);
for(i=2;i=n; i++)
{
k=n%i;
if(k==0)
flag++;
}
        if(flag==0)
        printf ("prime");
        else
        printf("Not prime");
getch();
      }
```

Output :

```
Enter n 2
prime
Enter n 8
Not prime
```

Result :

Thus the c program Check whether the given number is prime or not is executed and output is verified successfully.

Date :

Exp.no: 10

Calculate sum of the digits of the given number.

Aim :

To write a C program to calculate sum of the digits of the given number.

Algorithm :

Step -1: Enter a number digit

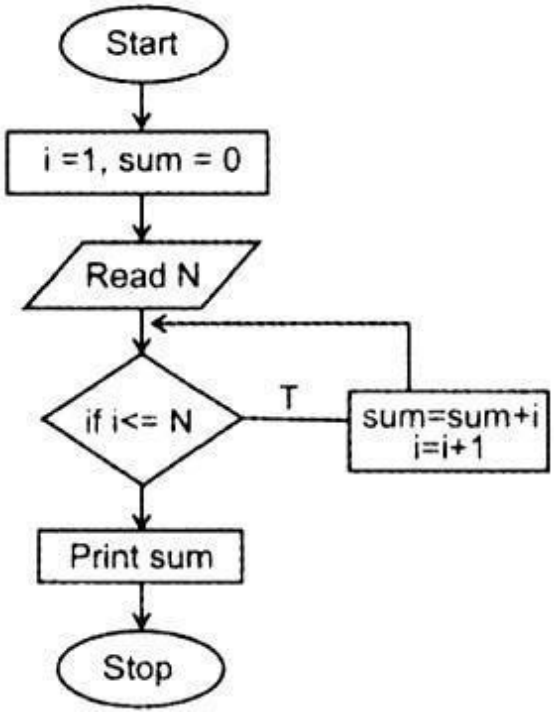
Step -2: Get the modulus/remainder of the number

Step -3: sum the remainder of the number

Step -4: Divide the number by 10

Step -5: Repeat the step 2 while number is greater than 0

Flow chart :



Code :

```
#include <stdio.h>
#include<conio.h>
void main()
{
int num, sum=0;
clrscr();
printf("Enter any number: ");
scanf("%d", &num);
while(num!=0)
{
sum += num % 10;
num = num / 10;
}
printf("Sum of digits = %d", sum);
getch();
}
```

Output :

```
Enter any number:123
Sum of digits = 6

...Program finished with exit code 0
Press ENTER to exit console.
```

Result :

Thus the c program to calculate sum of the digits of the given number is executed and verified successfully.

Date :

Exp.no: 11

Display Fibonacci series up to N terms.

Aim :

To write a C program to display Fibonacci series up to N terms.

Algorithm :

Step -1: Input number of Fibonacci terms to print.

Step -2: Declare and initialize three variables, a=0, b=1, c=0.

Step -3: Here c is the current term, b is the n-1th term and a is n-2th term.

Step -4: Run a loop from 1 to terms, increment loop counter by 1.

Step -5: The loop structure should look like for(i=1; i<=term; i++).

Step -6: |It will iterate through n terms.

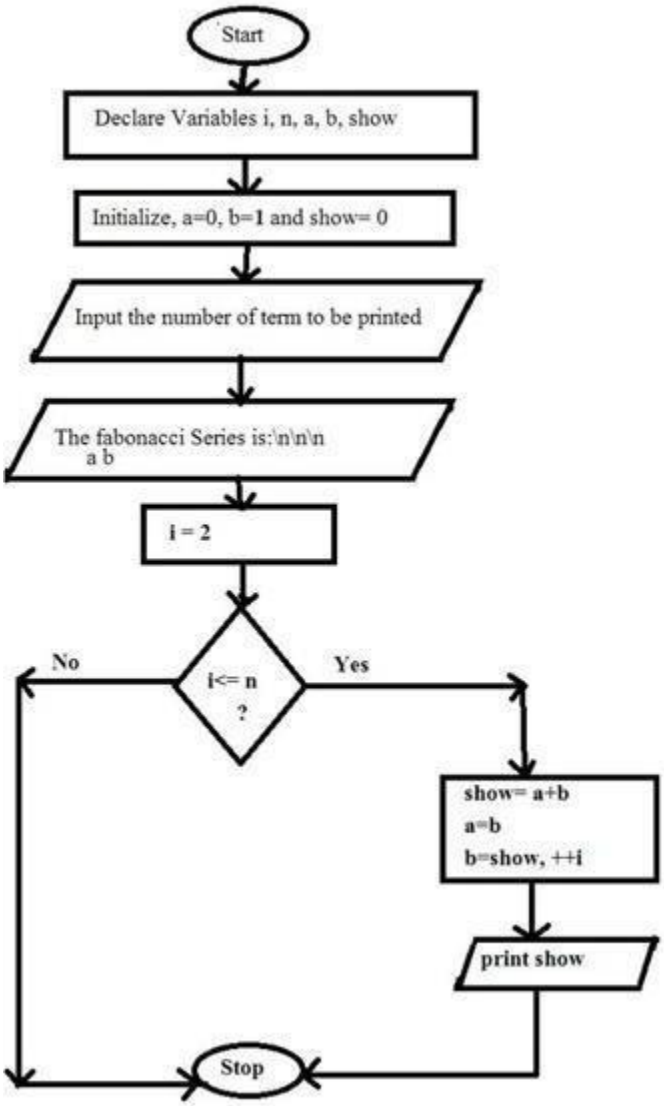
Step -7: Inside the loop copy the value of n-1th term to n-2th term i.e. a=b.

Step -8: Next, copy the value of nth to n-1th term b=c

Step -9: Finally compute the new term by adding previous two terms i.e. c = a+b.

Step -10: Print the value of current Fibonacci term i.e. c

Flow chart :


Start
Declare Variables i, n, a, b, show
Initialize, a=0, b=1 and show= 0
Input the number of term to be printed
The fabonacci Series is:\n\n\n
a b
i = 2
No
i<= n
?
Yes
show= a+b
a=b
b=show, ++i
print show
Stop

Code :

```
#include<stdio.h>
#include<conio.h>
void main ( )
{
    int n, a [20], i;
    clrscr();
    printf("Enter n");
    scanf("%d",&n);
    a[0]=0; a[1]=1;
    for(i=2; i<=n;i++)
    {
      a[i]=a[i-1]+a[i-2];
     }
    for(i=0; i<n;i++)
    {
      printf("%d\n", a[i]);
    }
getch();
}
```

Output :

```
Enter n 10
0
1
1
2
3
5
8
13
21
34


...Program finished with exit code 0
Press ENTER to exit console.
```

Result :

Thus the c program to display Fibonacci series up to N terms is executed and output is verified successfully.

Date :

Exp.no: 12

Check whether a given character is alphabetic, numeric or special character.

Aim :

To write a C program to check whether a given character is alphabetic, numeric or special character.

Algorithm :

Step -1: Input a character.

Step -2: First check if character is alphabet or not

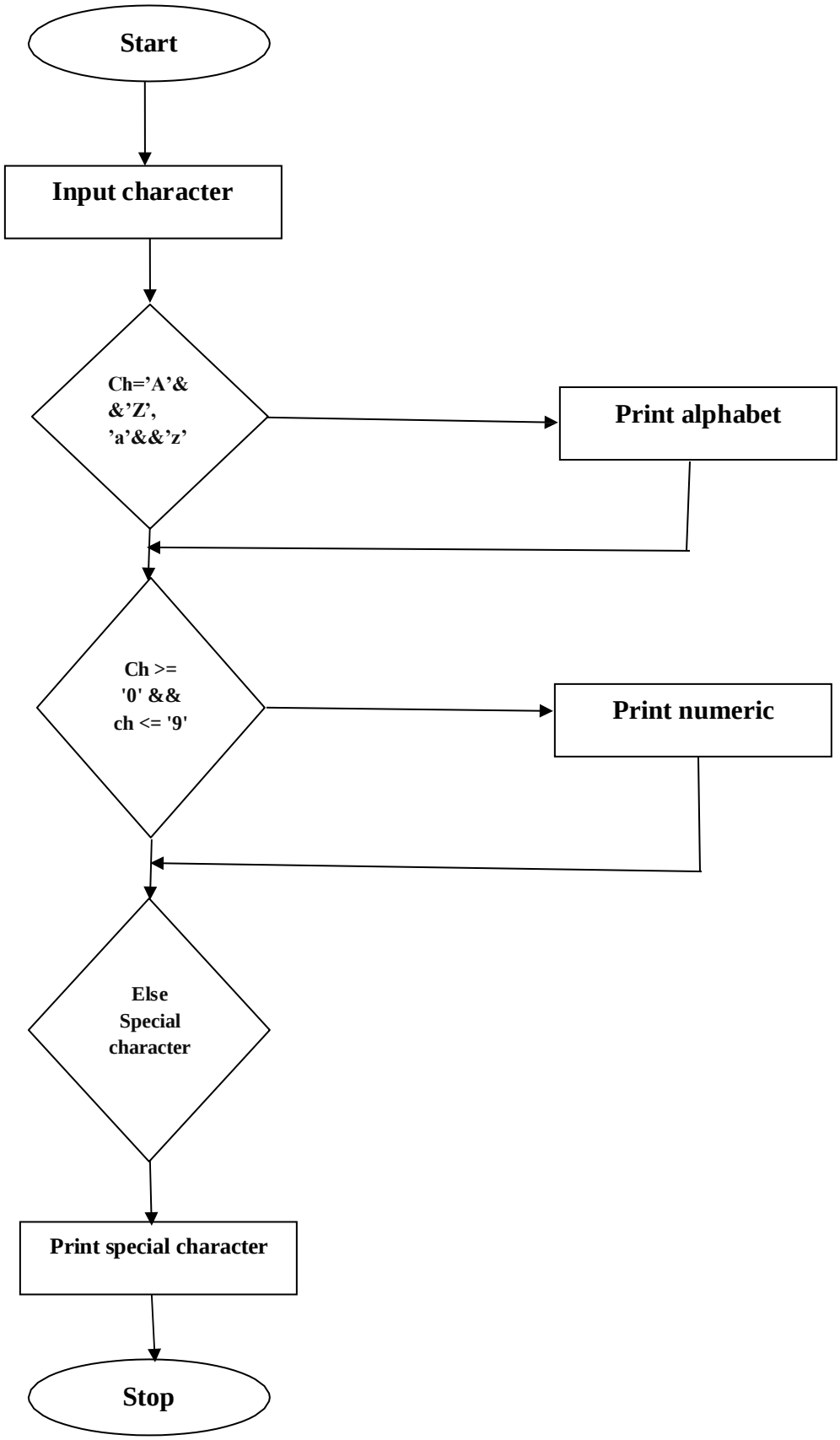
Step -3: A character is alphabet if ((ch >= „a‟ && ch <= „z‟) || (ch >= „A‟ && ch <= „Z‟))

Step -4: Next, check condition for digits.

Step -5: A character is digit if (ch >= „0‟ && ch <= „9‟)

Step -6: Finally, if a character is neither alphabet nor digit, then character is a special character.

Flow chart :


Start
Input character
Ch='A'&
&'Z',
'a'&&'z'
Print alphabet
Ch >=
'0' &&
ch <= '9'
Print numeric
Else
Special
character
Print special character
Stop

Code :

```
#include <stdio.h>
#include<conio.h>
void main()
{
char ch;
clrscr();
printf("Enter any character: ");
scanf("%c", &ch);
if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
{
	printf("%c is alphabet.", ch);
}
elseif(ch >= '0' && ch <= '9')
{
	printf("%c is numeric.", ch);
}
else
{
	printf("%c is special character.", ch);
}
getch();
}
```

Output :

```
Enter any character: &
& is special character.

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter any character: a
a is alphabet.

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter any character: 2
2 is numeric.

...Program finished with exit code 0
Press ENTER to exit console.
```

Result :

Thus the c program to check whether a given character is alphabetic, numeric or special character is executed and output is verified successfully.

MS-OFFICE

Date :

Exp.no: 13

Preparing a Newsletter : To prepare a newsletter with borders, two columns text, header and footer, inserting a graphic image and page layout.

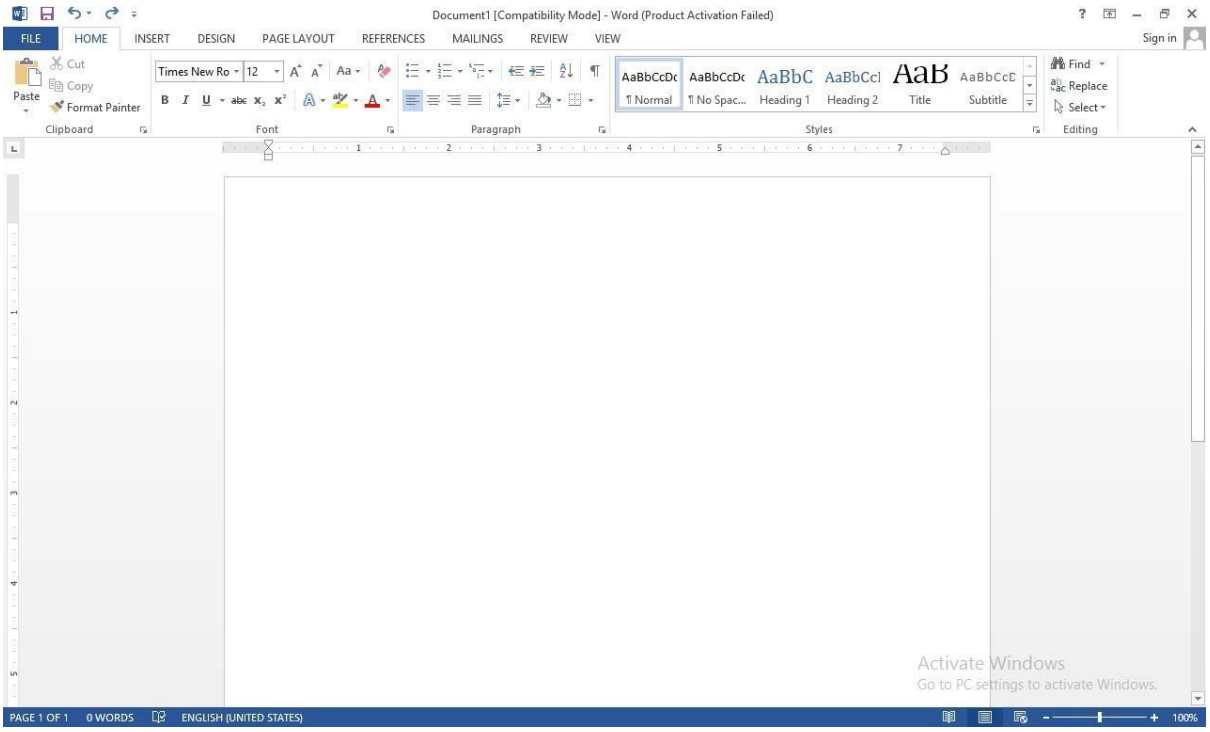
Aim :

To prepare a newsletter with borders, two columns text, header and footer and inserting a graphic image and page layout.

Procedure :

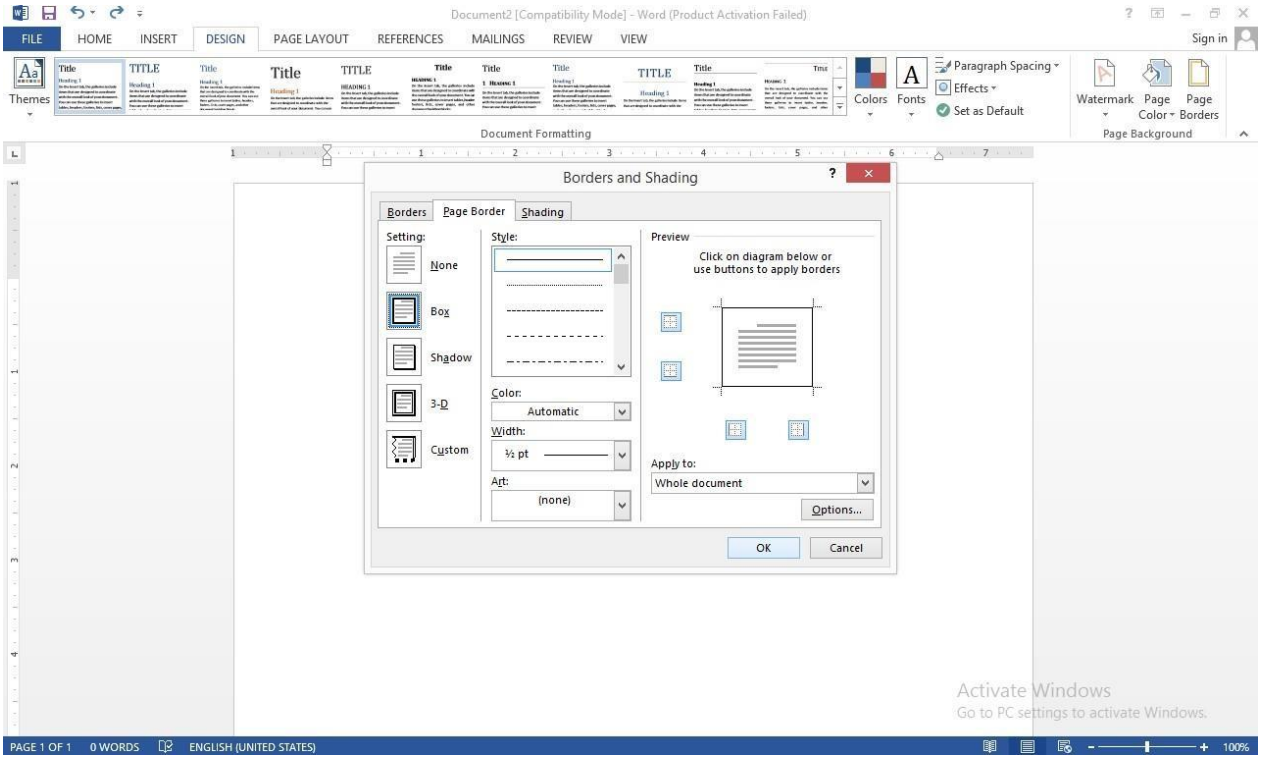
Step-1 : Create a New page.

Click on Home → New or Press Ctrl+N

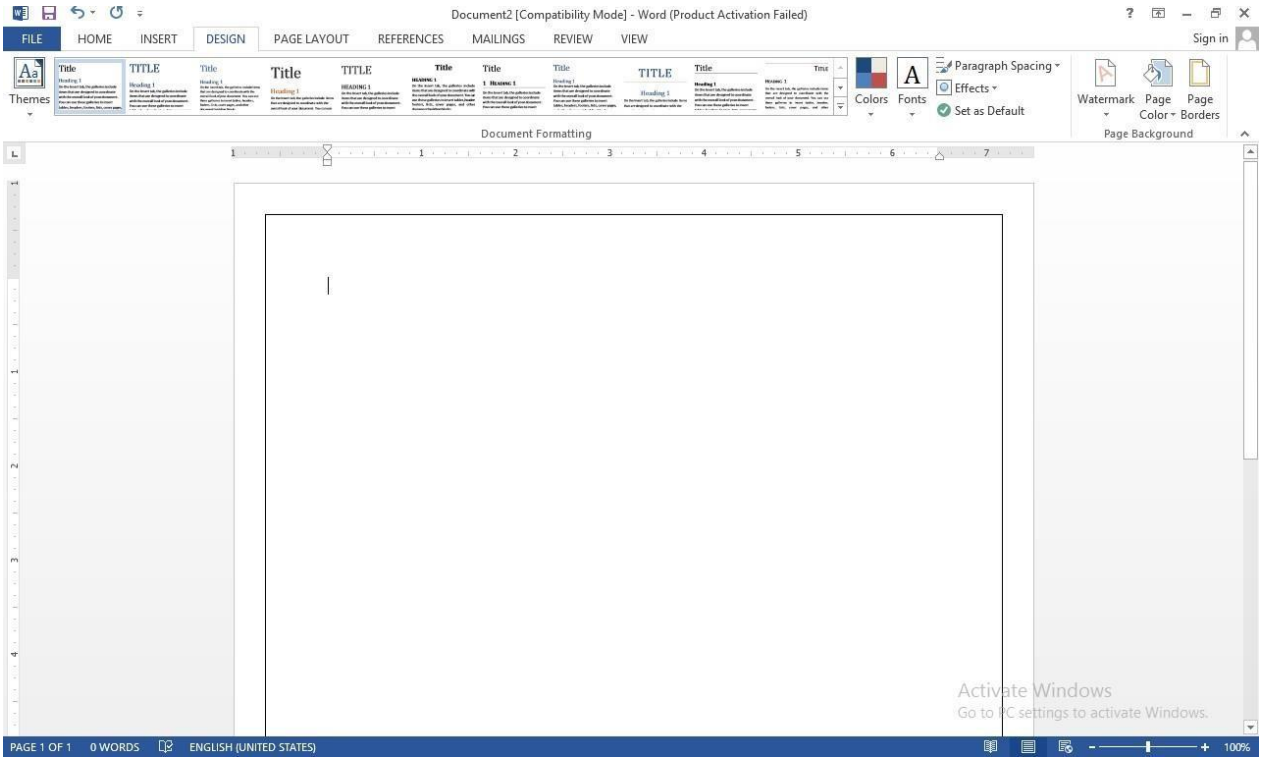


Step–2 : To create borders.

- Click on Design → Select Page Border → Choose the required border style and click OK.

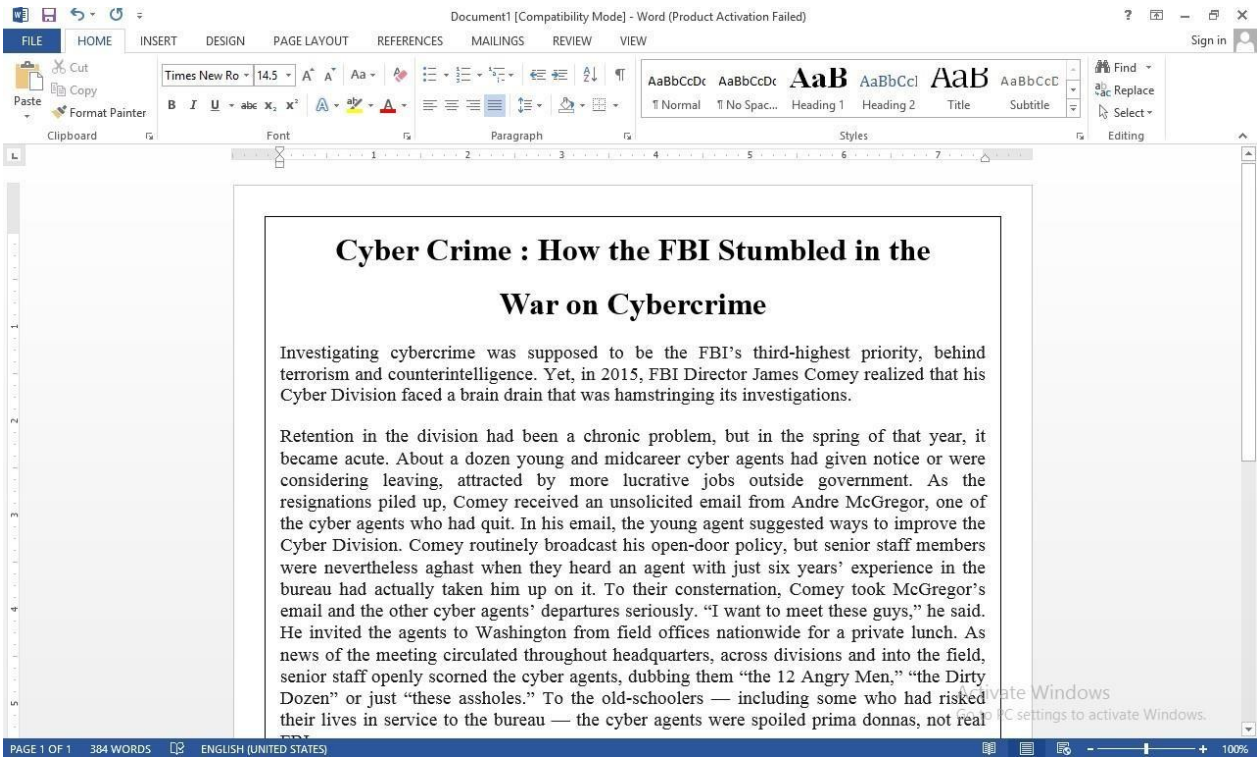


- The border appears like the below figure.



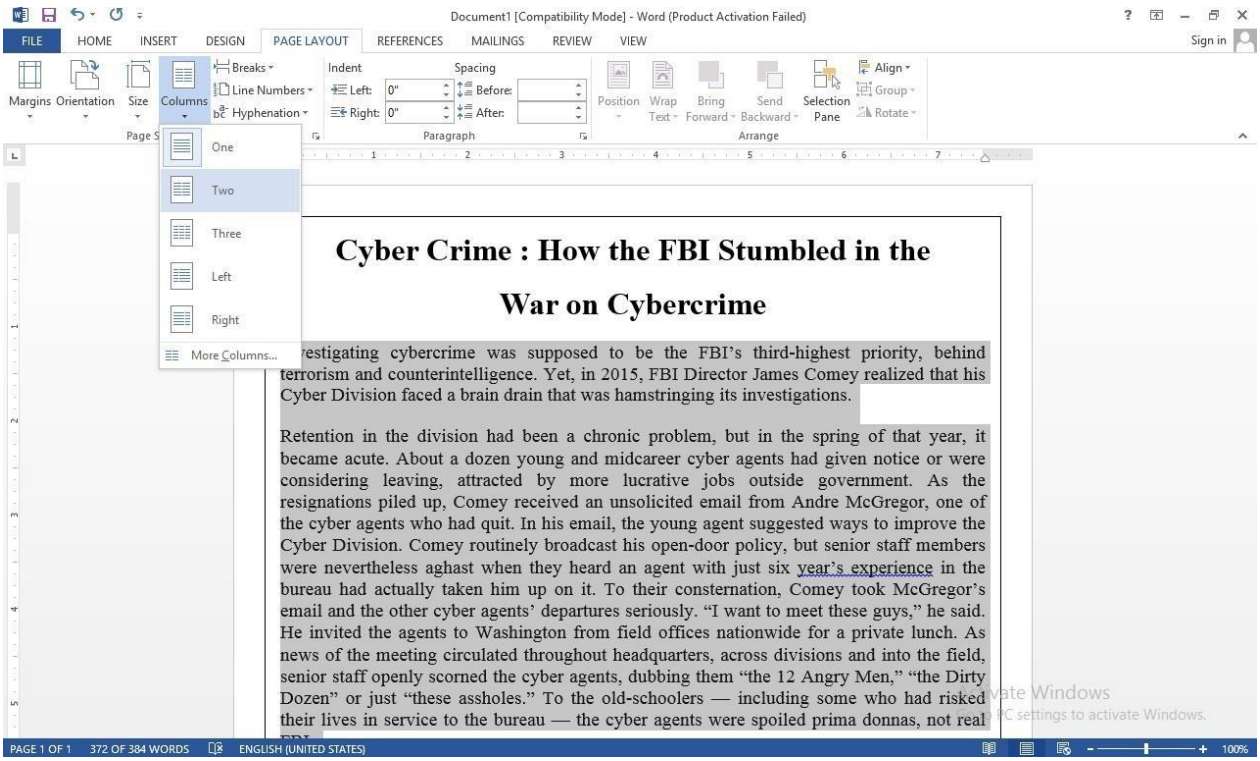
Step – 3 : To create a two column text.

- Enter the required contents in the page.

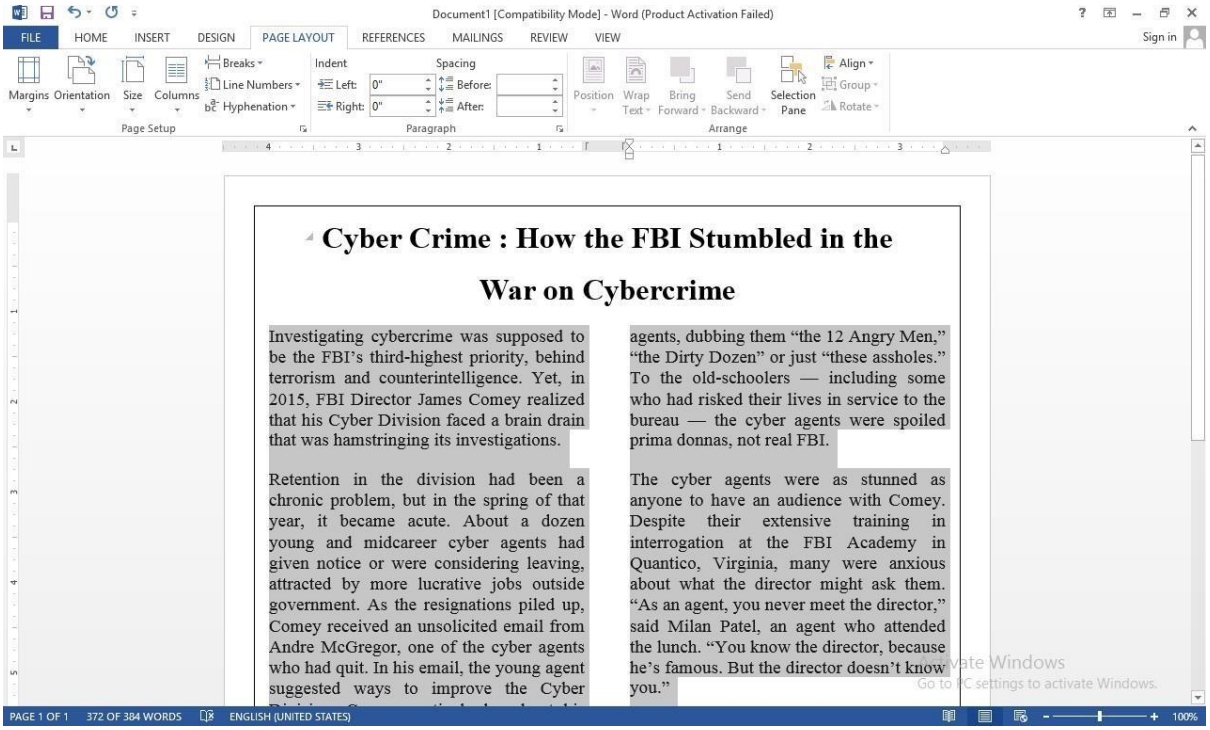


- Select the required text to be represented as two column text.

- Click on Page layout → Columns → Click on Two.



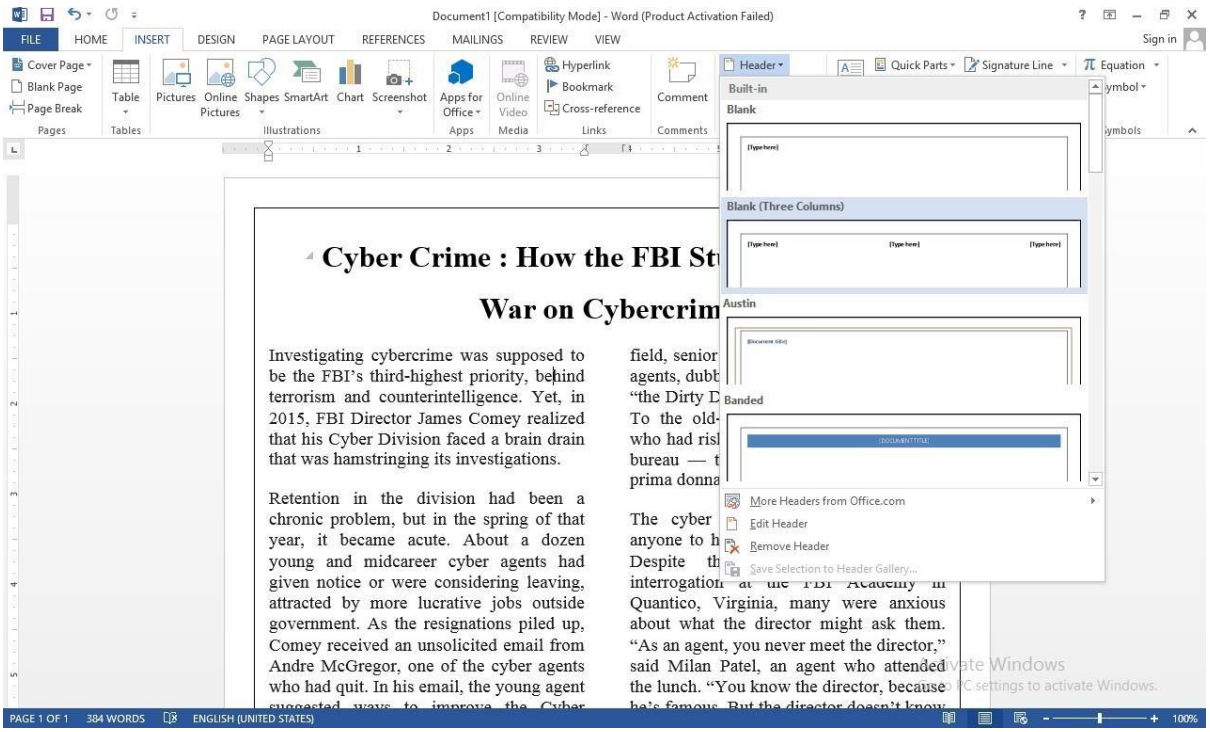
- Your page looks like the below figure.



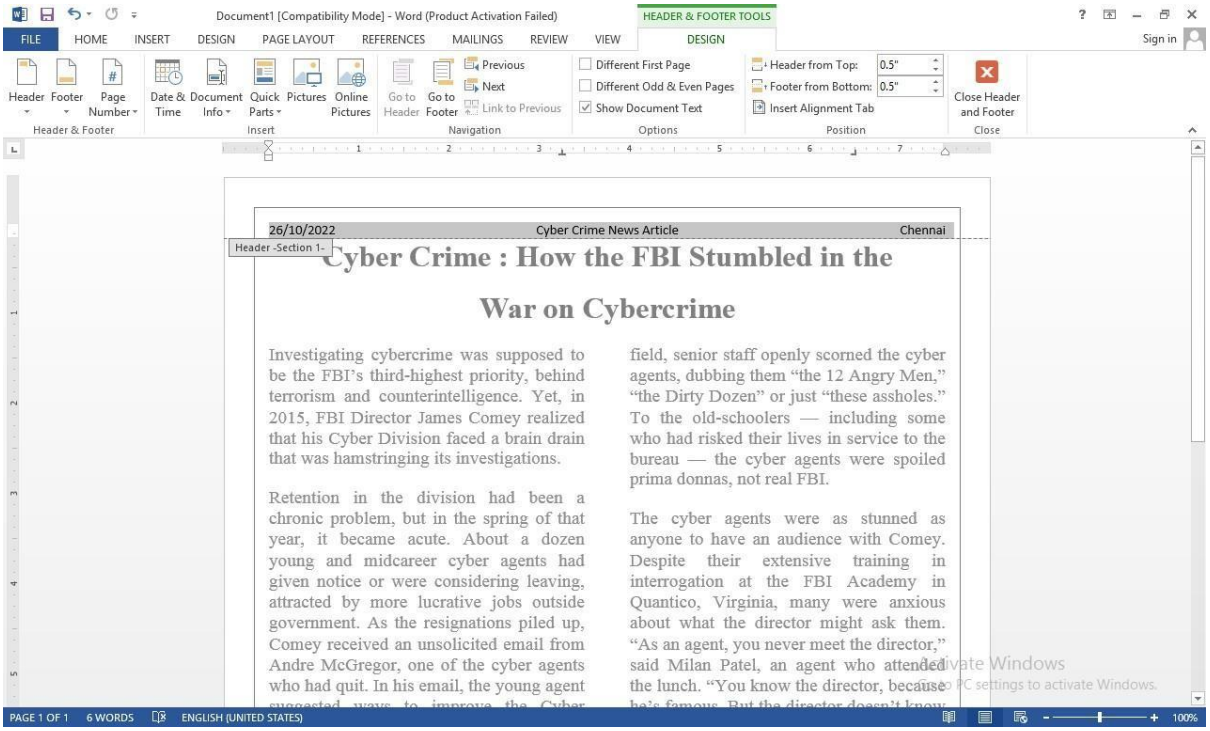
Step – 4 : Inserting Header and Footer :

Header :

- Click on Insert → Header →Select the required header style.

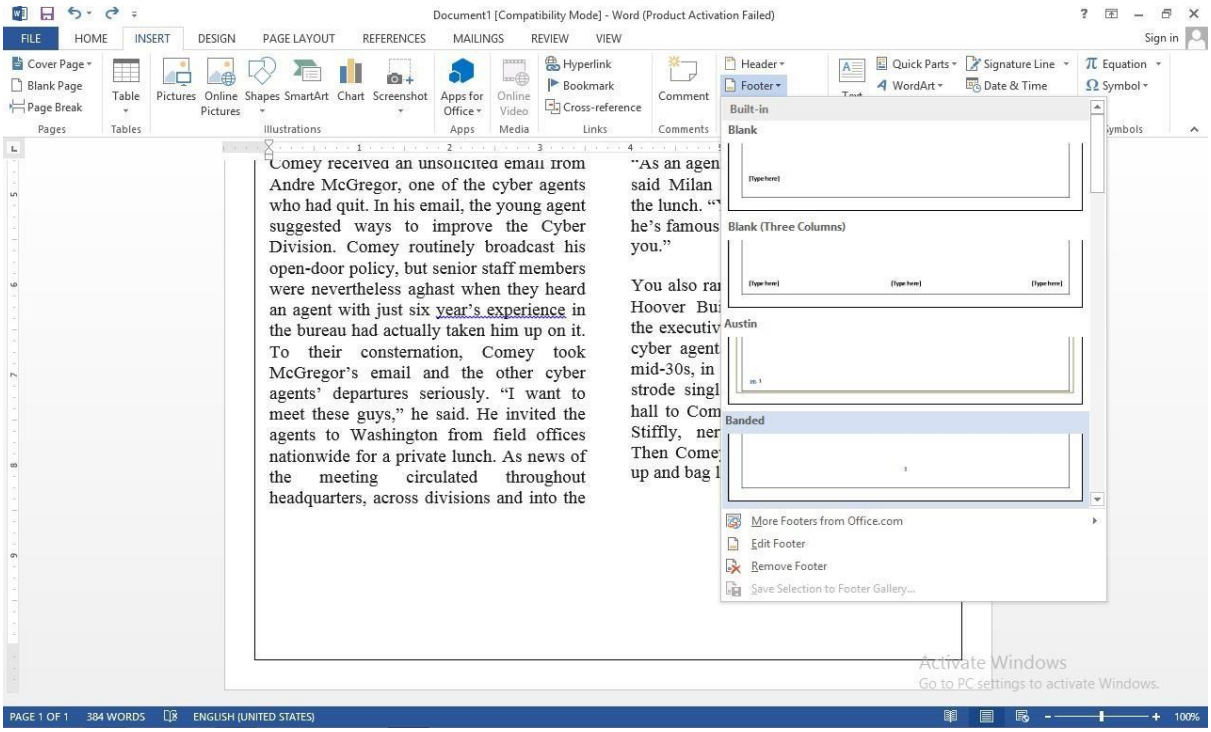


- Give the required data like Date, Article name & Place.

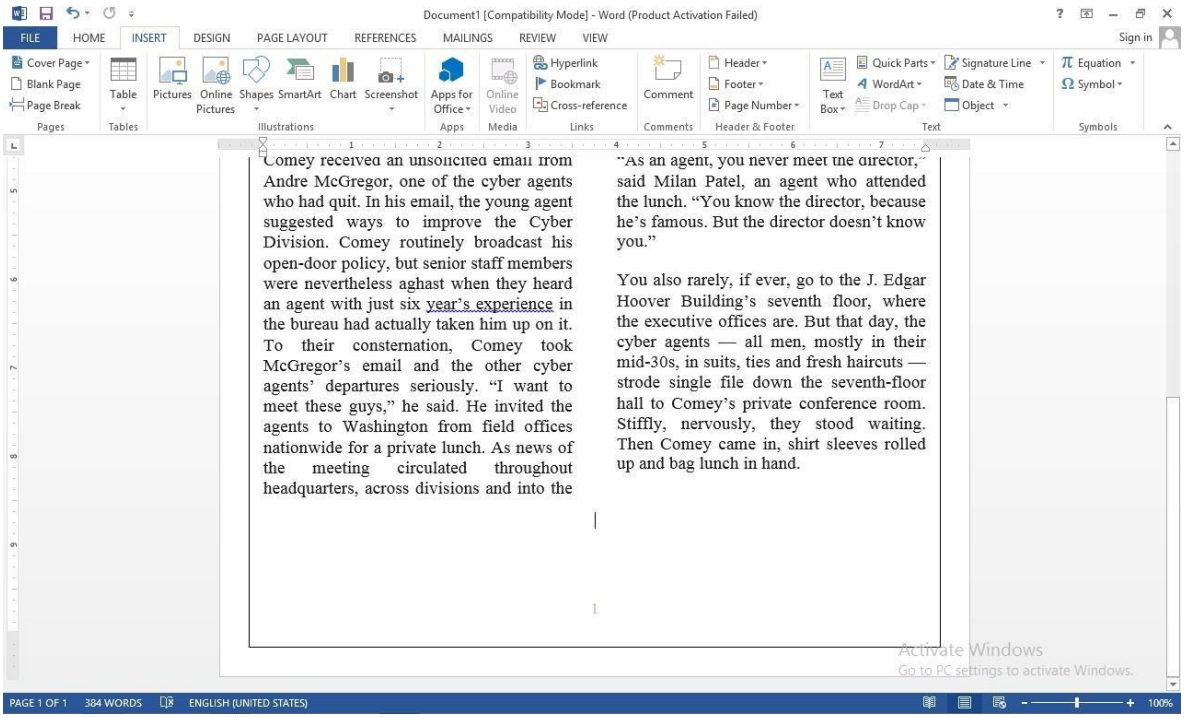


Footer :

- Click on Insert → Footer →Select the required footer style.

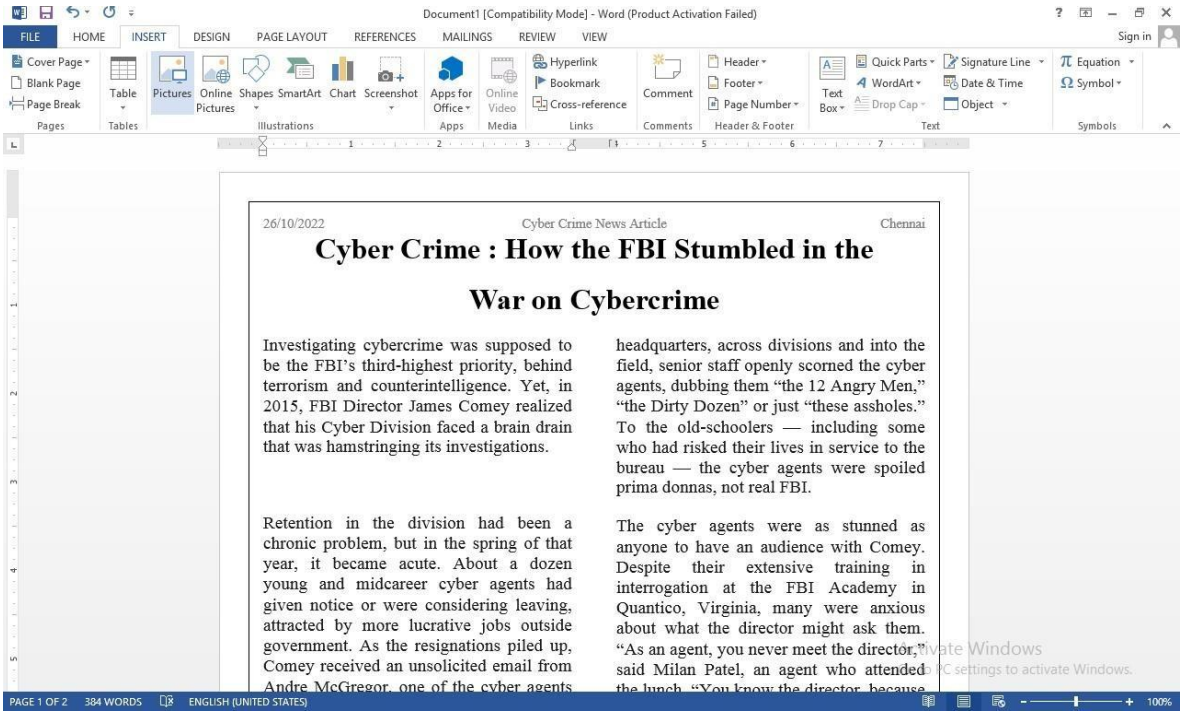


- Give page number and the page looks like the below figure.

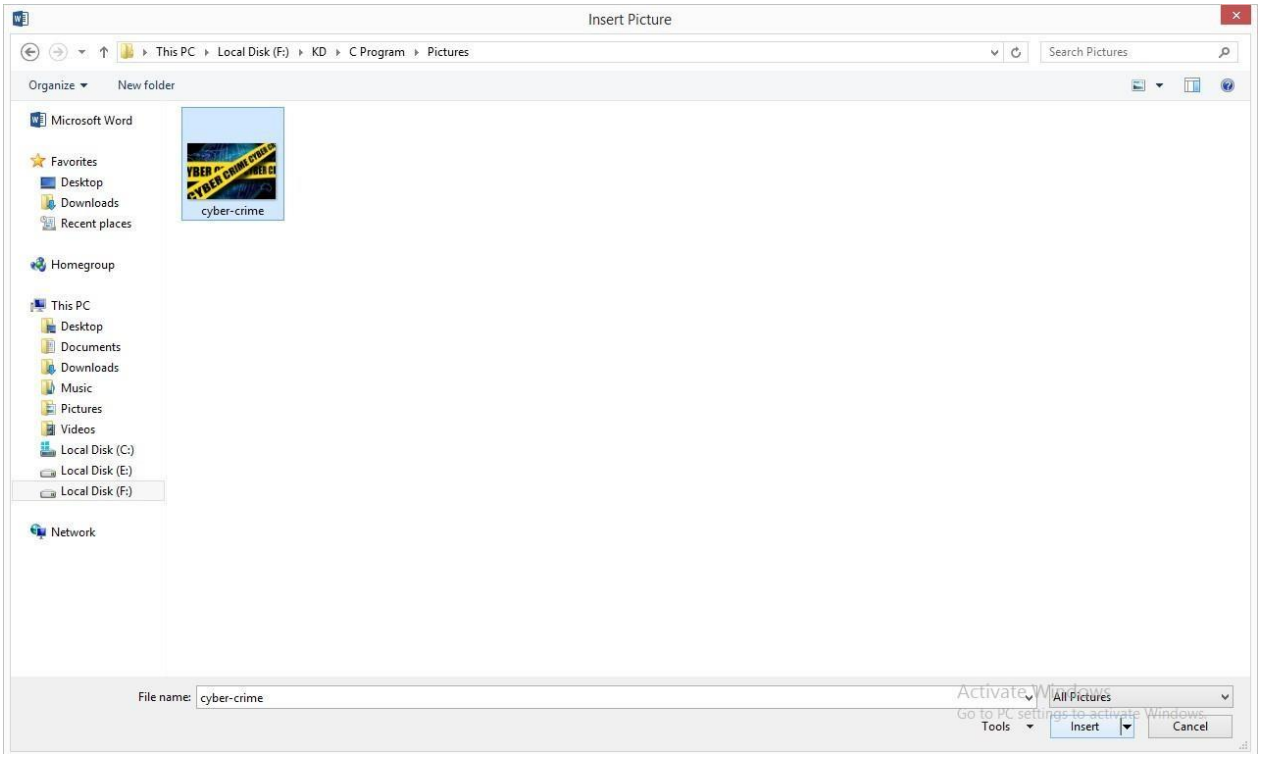


Step – 5 : Insert a graphic image :

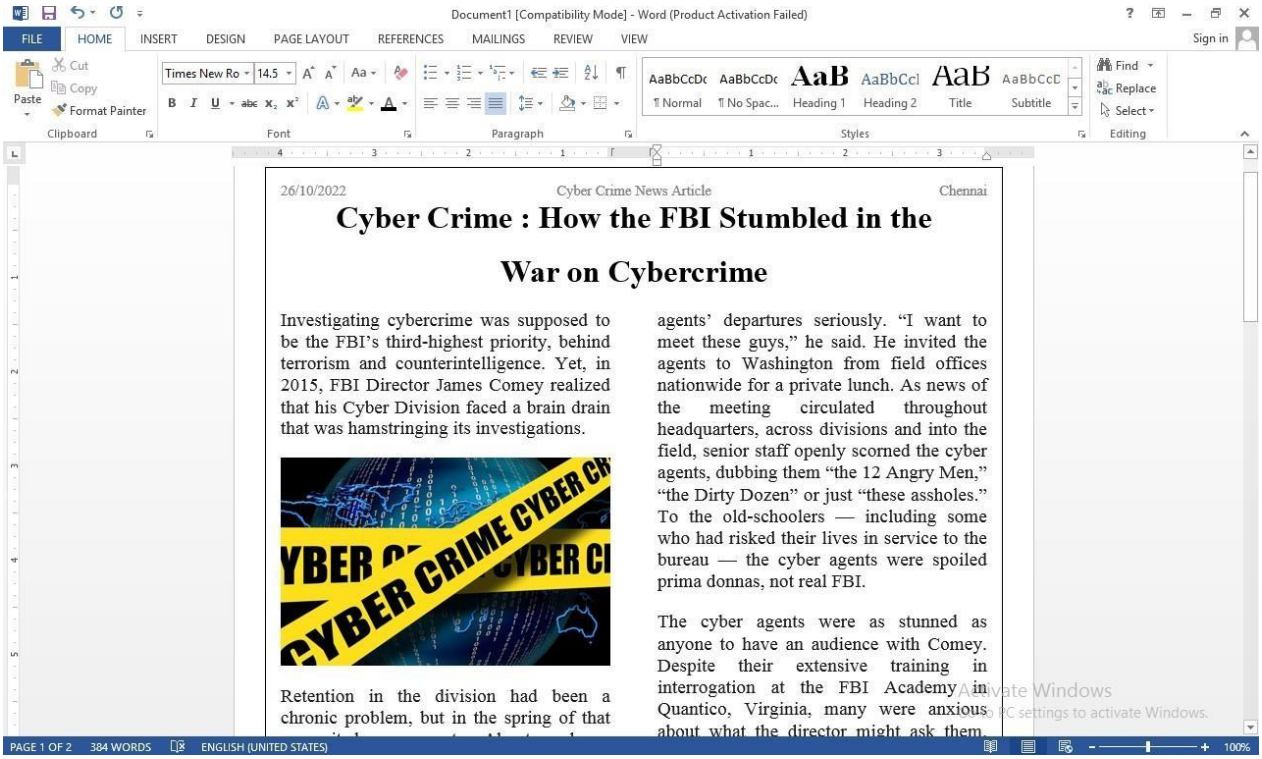
- Place the cursor were you need to place the graphic image.
- Click on Insert → Pictures.



- Select the required image and click on insert.

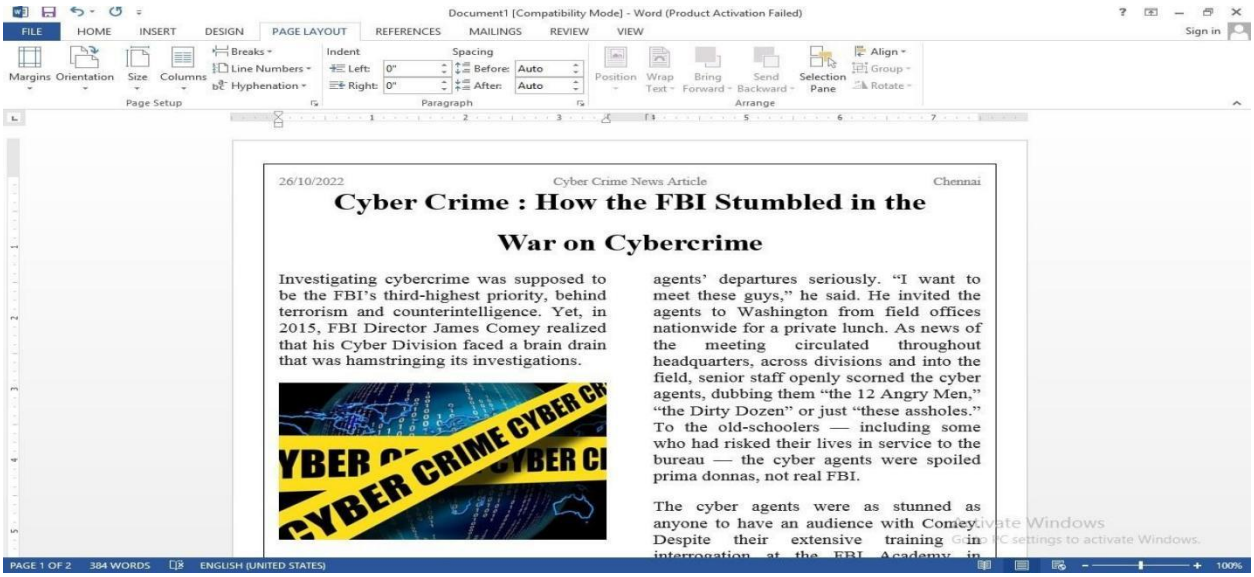


- Your page will look like the below figure.



Step – 6 : Page Layout.

- Click on Page layout.



- Here you can set margins, apply themes, control of page orientation and size, add sections and line breaks, display line numbers, and set paragraph indentation and lines.

Result :

Thus the experiment to prepare a newsletter with borders, two columns text, header and footer, inserting a graphic image and page layout is created successfully.

Date :

Exp.no: 14

Creating and editing the table.

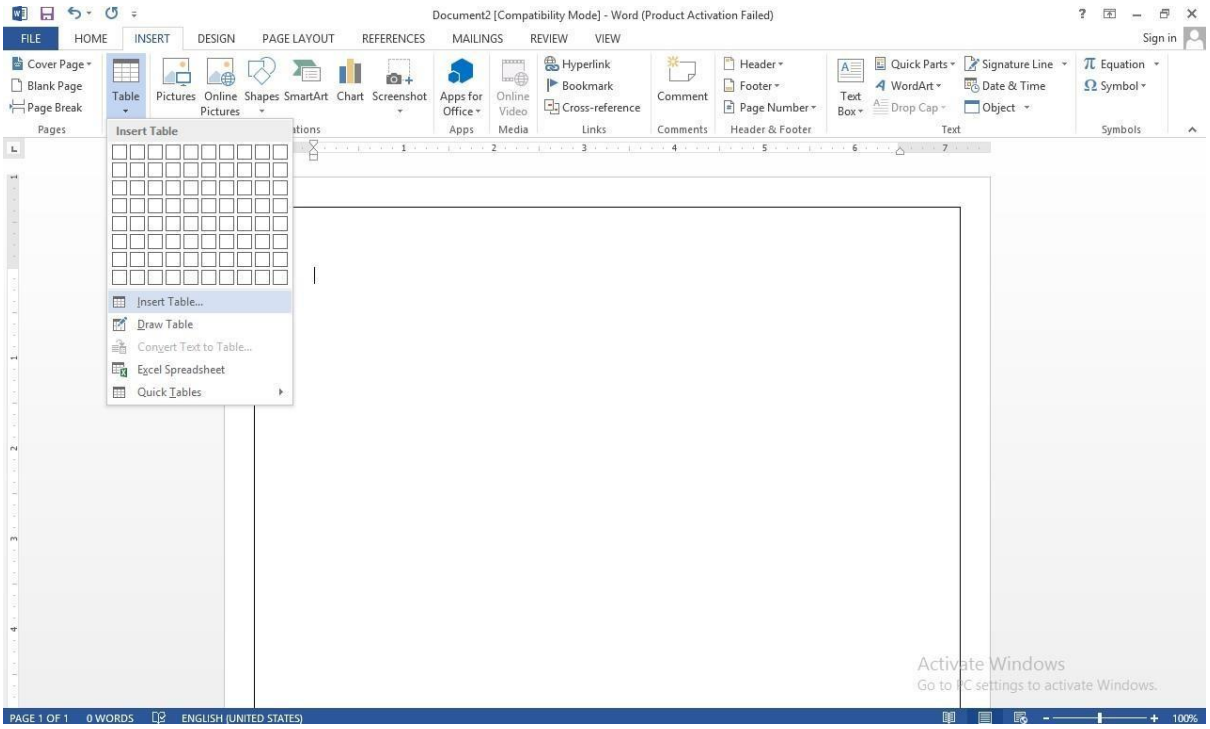
Aim :

To create a table and edit the table in MS Office.

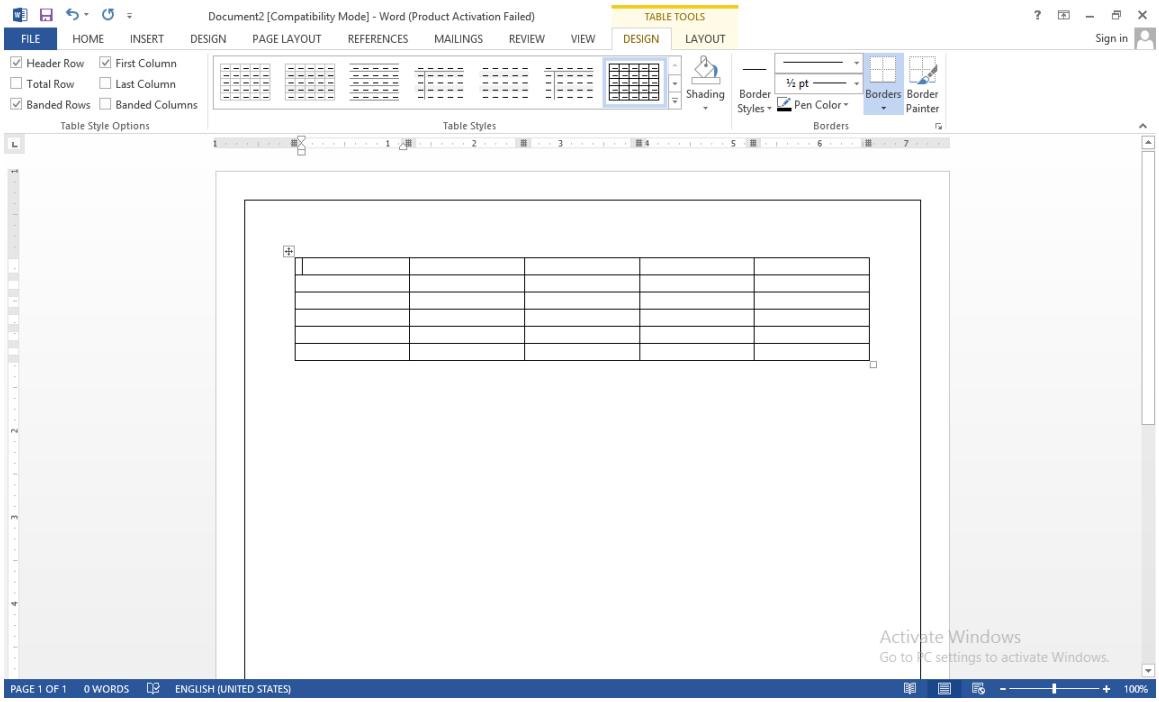
Procedure :

Step - 1 : To create a new table :

- Move the cursor to the location in the document where you want to create the table.
- Click the Table button in the Elements tool or choose Insert → click Table. The table dialog displays
- Enter the initial number of rows and columns for the new table and specify the border width.

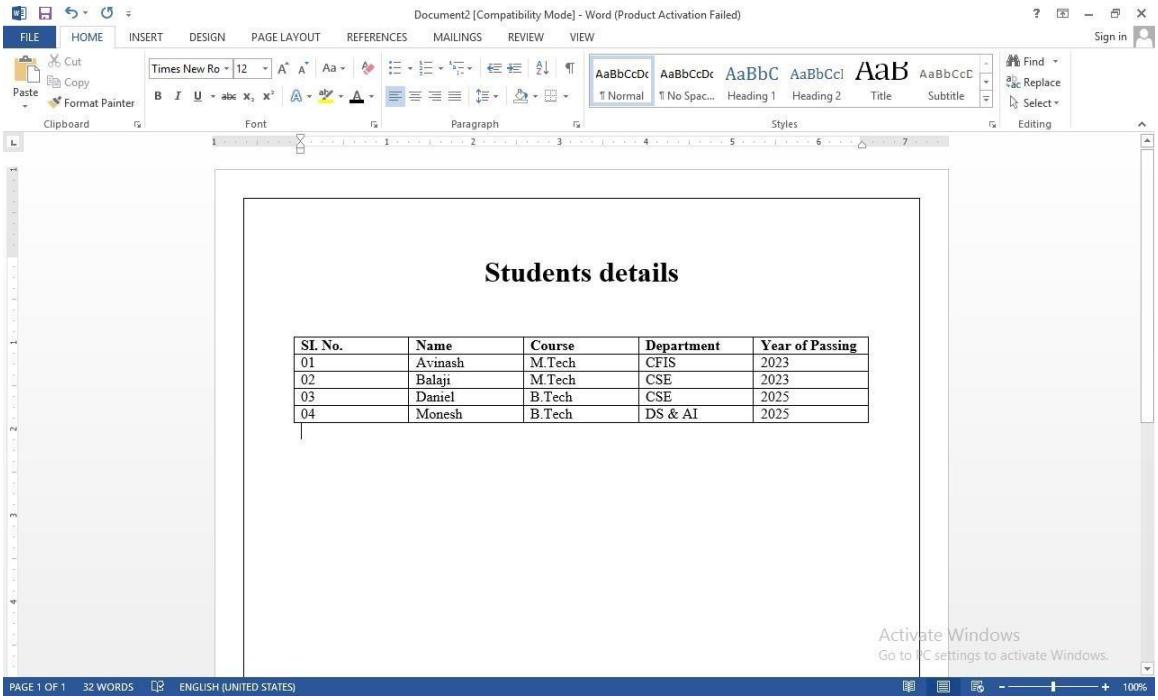


- Click the confirm button.
- The table is created successfully.



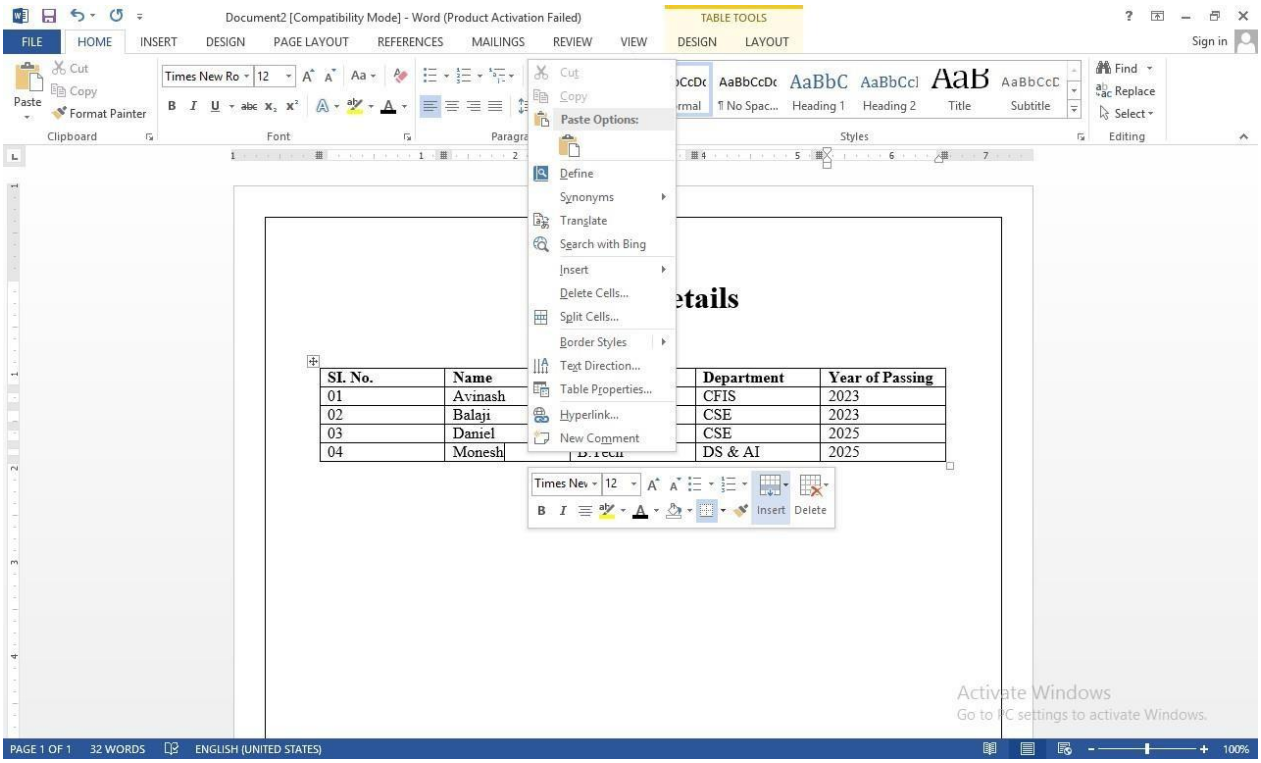
Step – 2 : Editing the table.

- Enter the required data in the new table.



Add rows and columns :

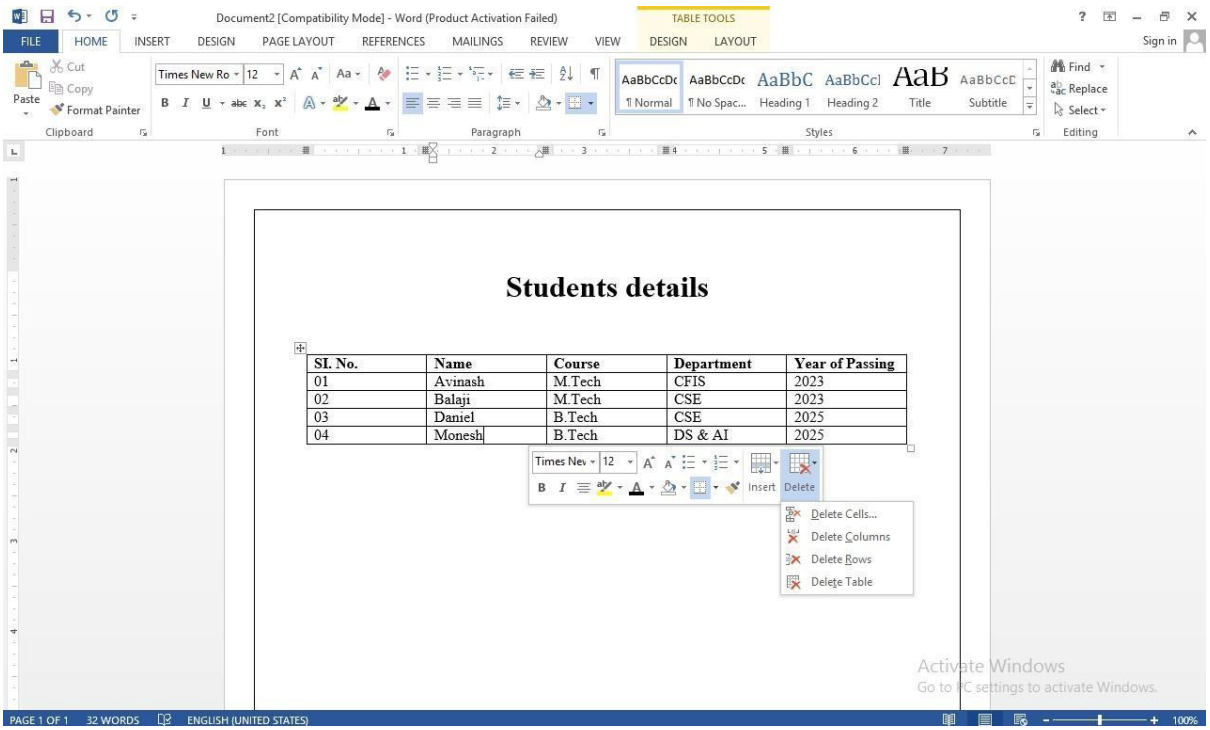
- Place the cursor were you want to edit the table.
- Right-Click on the cell. Dialog box appears.
- Click on insert option.
- It shows various options like :
  - Insert column left.
  - Insert column right.
  - Insert row above.
  - Insert row below.



- You can add the number of rows and columns by selecting the options in the dialog box.

Step – 3 : Deleting the table.

- Place the cursor were you want to delete the table.
- Right-Click on the cell. Dialog box appears.
- Click on delete option.
- It shows various options like :
  - Delete cell
  - Delete row
  - Delete column
  - Delete table



Result :

Thus the experiment to create and edit the table is executed and output is verified successfully.

Date :

Exp.no: 15

Prepare a statement for displaying result of 10 students in 5 subjects.

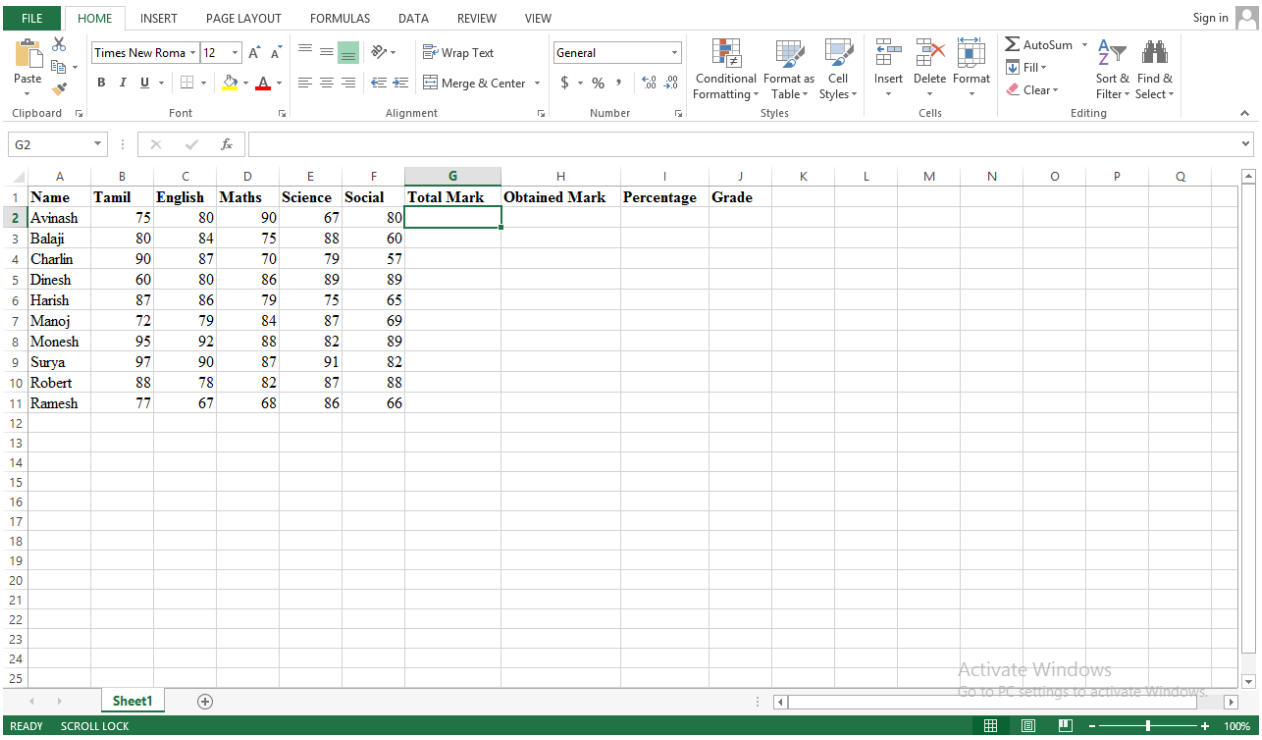
Aim :

To prepare a statement for displaying result of 10 students in 5 subjects.

Procedure :

Step – 1 :

- Create a worksheet with 10 students name and marks obtained by them in 5 subjects.



Name	Tamil	English	Maths	Science	Social	Total Mark	Obtained Mark	Percentage	Grade
Avinash	75	80	90	67	80				
Balaji	80	84	75	88	60				
Charlin	90	87	70	79	57				
Dinesh	60	80	86	89	89				
Harish	87	86	79	75	65				
Manoj	72	79	84	87	69				
Monesh	95	92	88	82	89				
Surya	97	90	87	91	82				
Robert	88	78	82	87	88				
Ramesh	77	67	68	86	66				

Step – 2 :

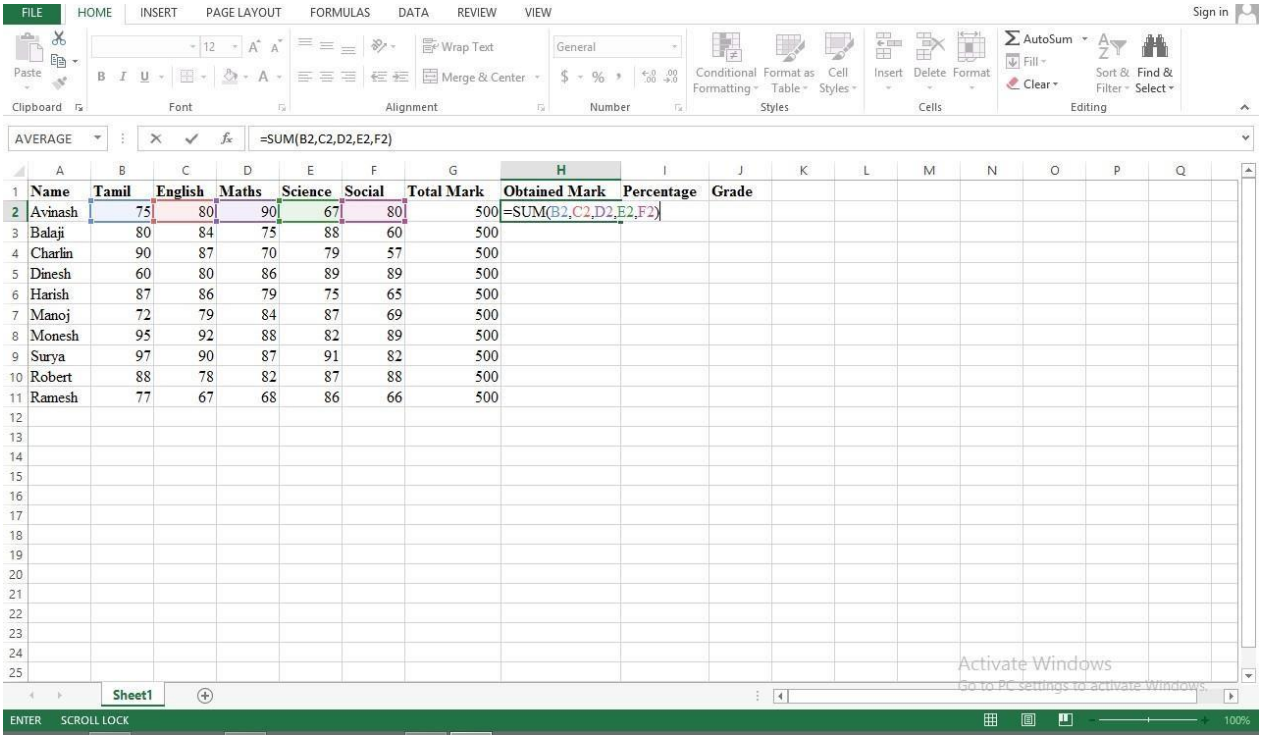
Formula for marks obtained.

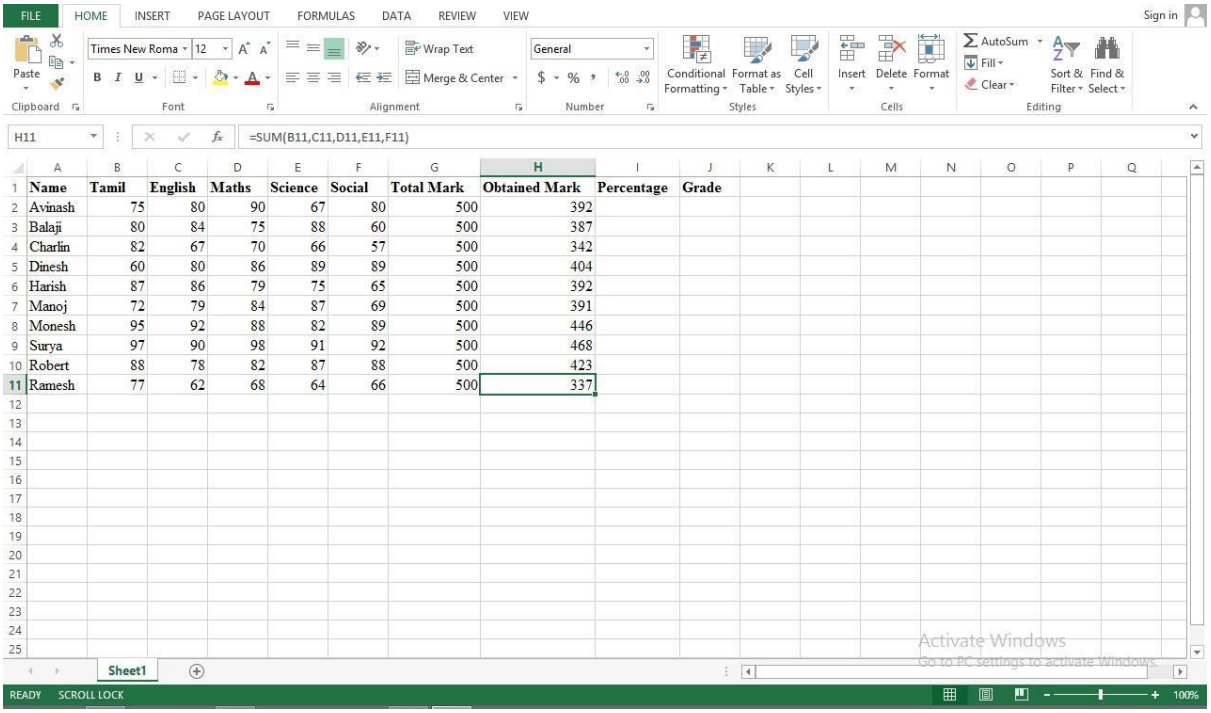
[(Formula = SUM(First cell name,Second cell name, Third cell name)]

(Formula = First cell name + Second cell name + Third cell name)

- Select the cell were you want to do the function.
- For multiplying two or more value use the symbol (+)

- Select the cell G6 and type the formula as **=SUM(B2,C2,D2,E2,F2)** or **=b2+C2+D2=E2+F2.**
- Then press Enter key for answer.



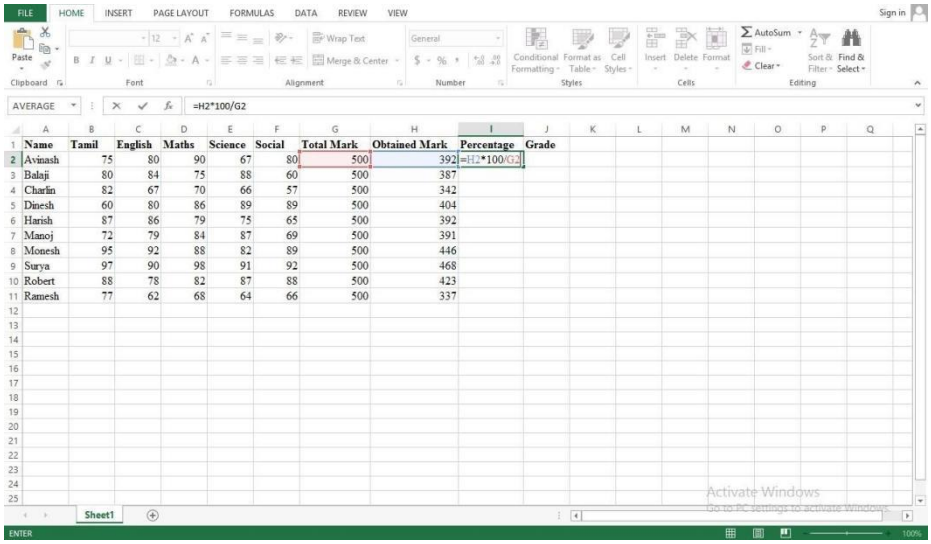


Step – 3 :

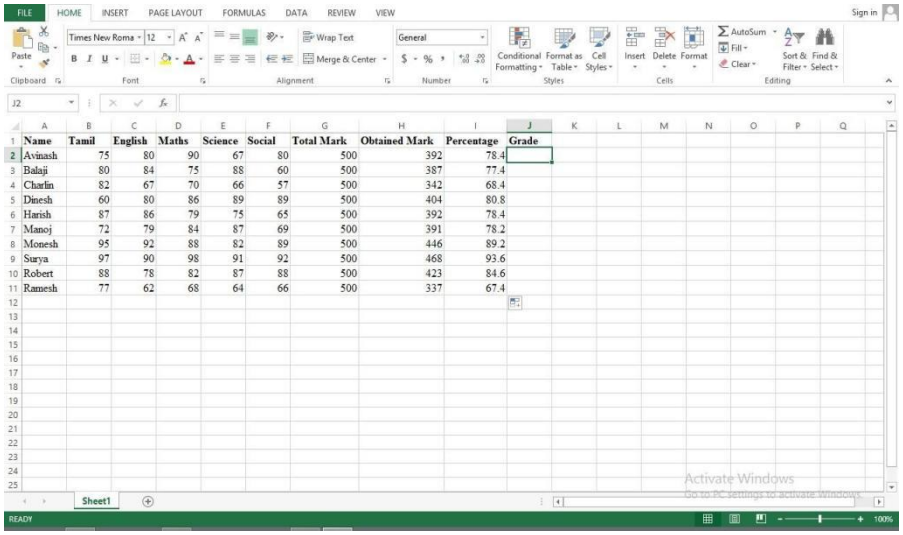
Formula for percentage.

(Formula = Cell name * percentage value %)

- Select the cell were you want to do the function.
- For percentage use the symbol asterisk (*) and percentage (%)
- If the total mark is 500 marks, then
- Select the cell F6 and type the formula as **=H2*100/G2**
- Then press Enter key for answer.



Name	Tamil	English	Maths	Science	Social	Total Mark	Obtained Mark	Percentage	Grade
Avinash	75	80	90	67	80	500	392	=H2*100/G2	
Balaji	80	84	75	88	60	500	387		
Charlin	82	67	70	66	57	500	342		
Dinesh	60	80	86	89	89	500	404		
Harish	87	86	79	75	65	500	392		
Manoj	72	79	84	87	69	500	391		
Monesh	95	92	88	82	89	500	446		
Surya	97	90	98	91	92	500	468		
Robert	88	78	82	87	88	500	423		
Ramesh	77	62	68	64	66	500	337		

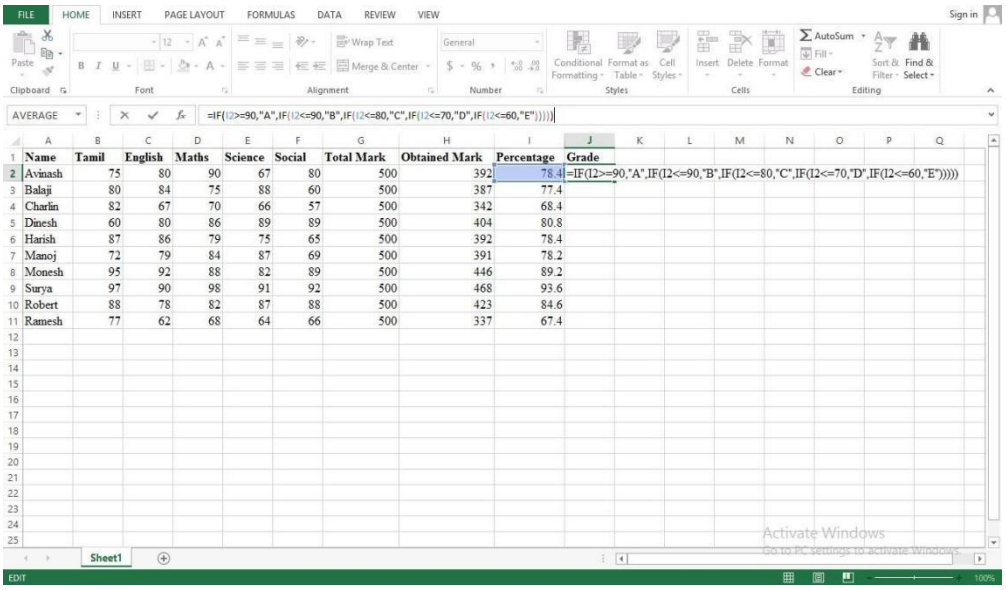


Name	Tamil	English	Maths	Science	Social	Total Mark	Obtained Mark	Percentage	Grade
Avinash	75	80	90	67	80	500	392	78.4	
Balaji	80	84	75	88	60	500	387	77.4	
Charlin	82	67	70	66	57	500	342	68.4	
Dinesh	60	80	86	89	89	500	404	80.8	
Harish	87	86	79	75	65	500	392	78.4	
Manoj	72	79	84	87	69	500	391	78.2	
Monesh	95	92	88	82	89	500	446	89.2	
Surya	97	90	98	91	92	500	468	93.6	
Robert	88	78	82	87	88	500	423	84.6	
Ramesh	77	62	68	64	66	500	337	67.4	

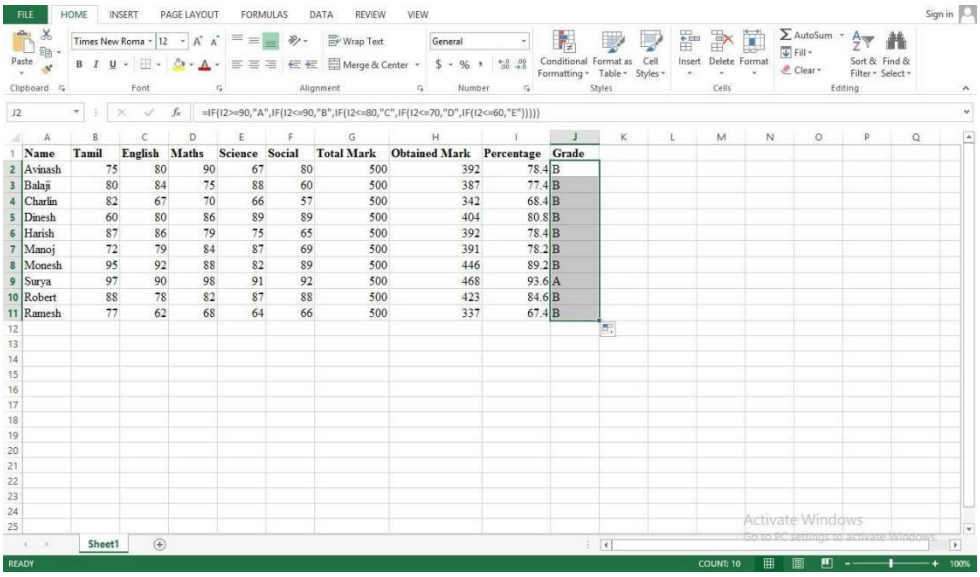
Step – 4 :

Formula for Grade :

- Select the cell were you want to do the function.
- For grade we must assign greater than or lesser than symbols.
- Select the cell J2 and type the formula as =IF(I2>=90,"A",IF(I2<=90,"B",IF(I2<=80,"C",IF(I2<=70,"D",IF(I2<=60,"E")))))
- Then press Enter key for answer.



Name	Tamil	English	Maths	Science	Social	Total Mark	Obtained Mark	Percentage	Grade
Avinash	75	80	90	67	80	500	392	78.4	=IF(I2>=90,"A",IF(I2<=90,"B",IF(I2<=80,"C",IF(I2<=70,"D",IF(I2<=60,"E")))))
Balaji	80	84	75	88	60	500	387	77.4	
Charlin	82	67	70	66	57	500	342	68.4	
Dinesh	60	80	86	89	89	500	404	80.8	
Harish	87	86	79	75	65	500	392	78.4	
Manoj	72	79	84	87	69	500	391	78.2	
Monesh	95	92	88	82	89	500	446	89.2	
Surya	97	90	98	91	92	500	468	93.6	
Robert	88	78	82	87	88	500	423	84.6	
Ramesh	77	62	68	64	66	500	337	67.4	



Name	Tamil	English	Maths	Science	Social	Total Mark	Obtained Mark	Percentage	Grade
Avinash	75	80	90	67	80	500	392	78.4	B
Balaji	80	84	75	88	60	500	387	77.4	B
Charlin	82	67	70	66	57	500	342	68.4	B
Dinesh	60	80	86	89	89	500	404	80.8	B
Harish	87	86	79	75	65	500	392	78.4	B
Manoj	72	79	84	87	69	500	391	78.2	B
Monesh	95	92	88	82	89	500	446	89.2	B
Surya	97	90	98	91	92	500	468	93.6	A
Robert	88	78	82	87	88	500	423	84.6	B
Ramesh	77	62	68	64	66	500	337	67.4	B

Result :

Thus the experiment to prepare a statement for displaying result of 10 students in 5 subjects is executed and output is verified successfully.