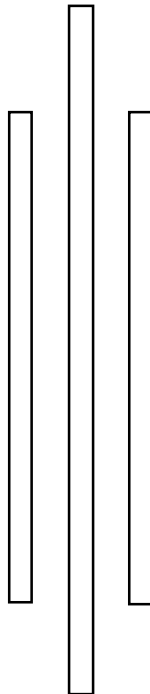


TRIBHUVAN UNIVERSITY



INSTITUTE OF ENGINEERING

Lab Sheet #5



PURWANCHAL CAMPUS

DHARAN-8

Submitted by:

Name: **Arbind Kumar Mehta**

Roll No: **PUR075BCT017**

Faculty: BCT

Group: I/I 'A'

Date:

Submitted to:

Department of

Electronics & Computer

Engineering

Checked by:

Title:

Write a program to find sum as Y of the following series excluding prime numbers in the series.

$$Y = 1 + 1/1! + 2^2/2! + 3^2/3! + \dots + 10^2/10!$$

Objective:

- ❖ To understand the programming using Loop & nested loop Statements (for, while, do-while)

Problem Analysis:

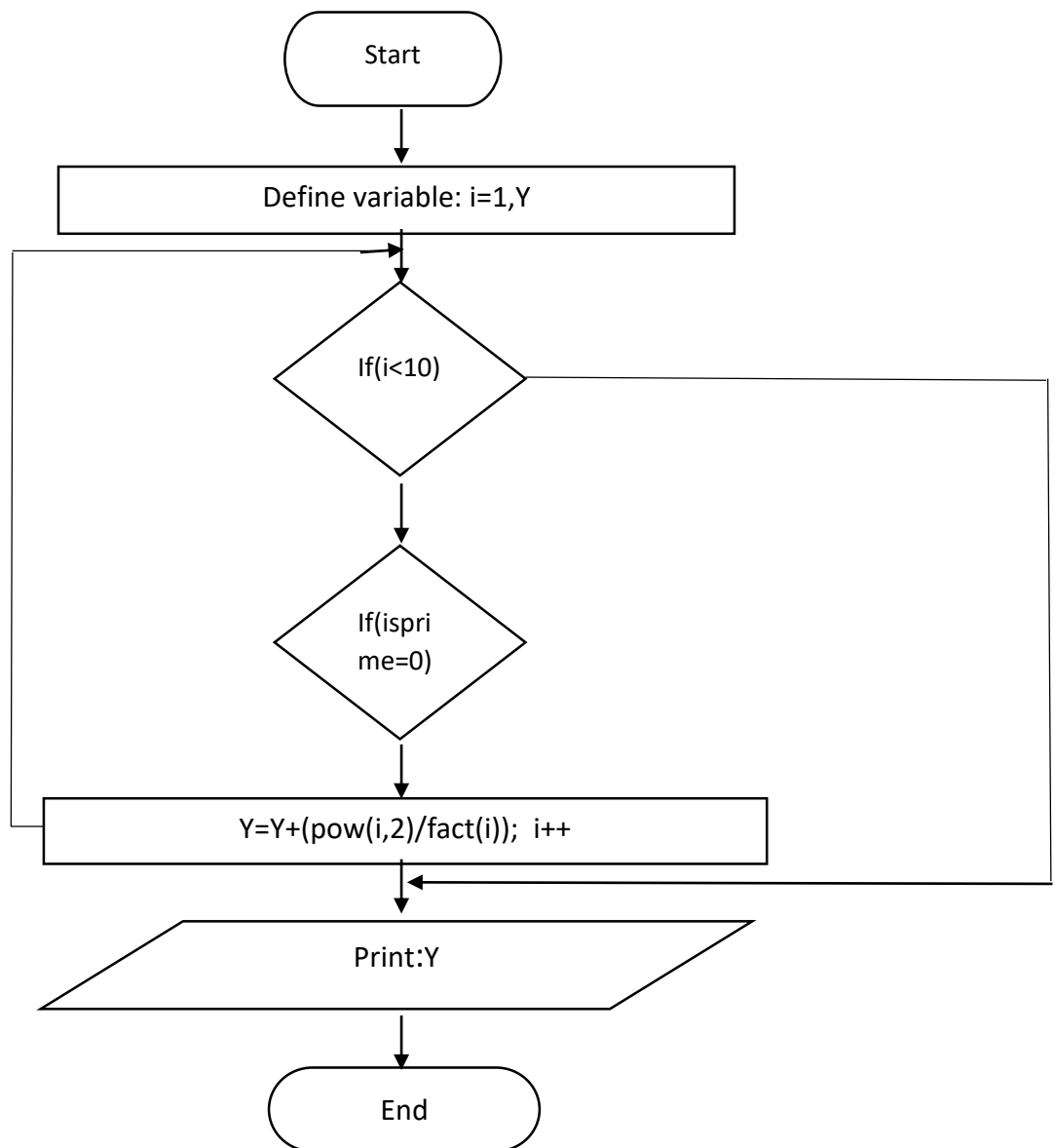
Based on problem, it is required to define three integer variable and a float variable. Different operation should performed using user defined function.

Input variables	Output variables	Necessary header files/functions/macros
n,i(int type)	Y(float type)	stdio.h coino.h scanf() printf() math.h isprime() fact()

Algorithm:

1. Start
2. Define variables: n,i,Y
for(i=1;i<=10;i++)
{
 if(isprime(i)==0)
 {
 Y=Y+(pow(i,2)/fact(i));
 }
}
3. Print:Y
4. Stop

Flowchart:



Code:

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int fact(int n)
{
    if(n==1 || n==0)
        return 1;
    else
```

```

        return(n*fact(n-1));
    }

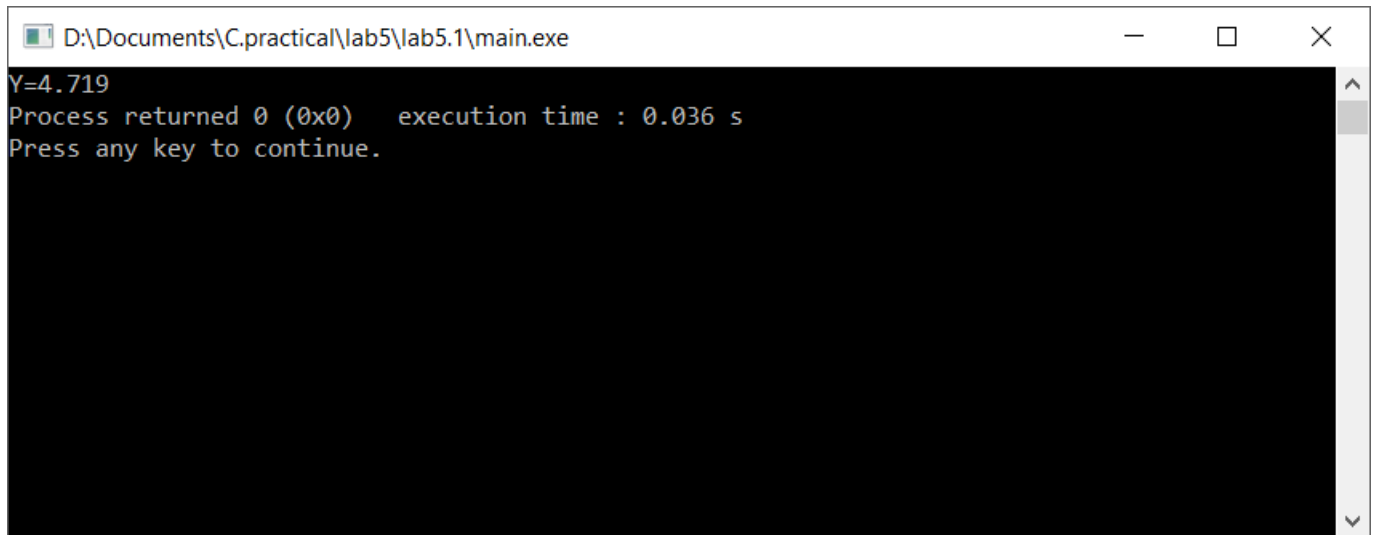
int isprime(int n)
{
    int i,flag=0;
    for(i=2;i<=n/2;i++)
    {
        if(n%i==0)
            flag=1;
    }
    if(flag==1 || n==1 || n==2)
        return 0;
    else
        return 1;
}

int main()
{
    int n,i;
    float Y=1.00;
    for(i=1;i<=10;i++)
    {
        if(isprime(i)==0)
        {
            Y=Y+(pow(i,2)/fact(i));
        }
    }
    printf("Y=%.3f",Y);

```

```
return 0;  
}
```

Output (Compilation, Debugging and Testing):



```
D:\Documents\C.practical\lab5\lab5.1\main.exe  
Y=4.719  
Process returned 0 (0x0) execution time : 0.036 s  
Press any key to continue.
```

Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to understand about C data types with formatted input/output functions with user defined functions.

Title:

Write a program to input two integer numbers and display the sum of even numbers between these two input numbers.

Objective:

- ❖ To understand the programming using Loop & nested loop Statements (for, while, do-while)

Problem Analysis:

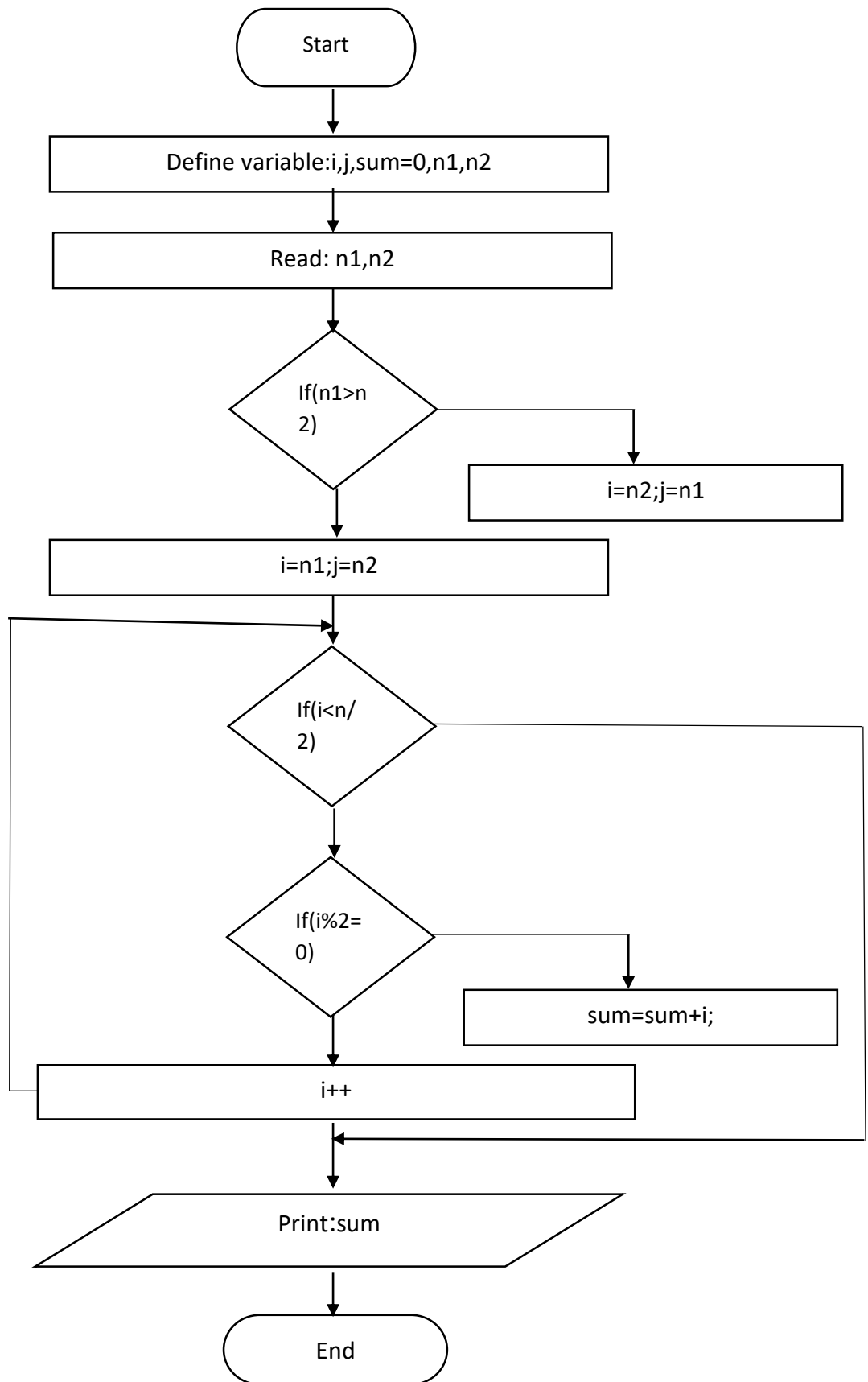
Based on problem, it is required to define four integer variable. Different operation should performed using if statement and for loop.

Input variables	Output variables	Necessary header files/functions/macros
n1,n2,i,j(int type)	sum(int type)	stdio.h coino.h scanf() printf()

Algorithm:

1. Start
2. Define variables: n1,n2,i,j,sum=0,
3. Read n1,n2
 if(n1>n2)
 {i=n2;
 j=n1;}
 else
 {
 i=n1;
 j=n2;
 }
 for(i;i<=j;i++)
 {
 if(i%2==0)
 sum=sum+i;
 }
4. Print: sum
5. Stop

Flowchart:



Code:

```
#include <stdio.h>

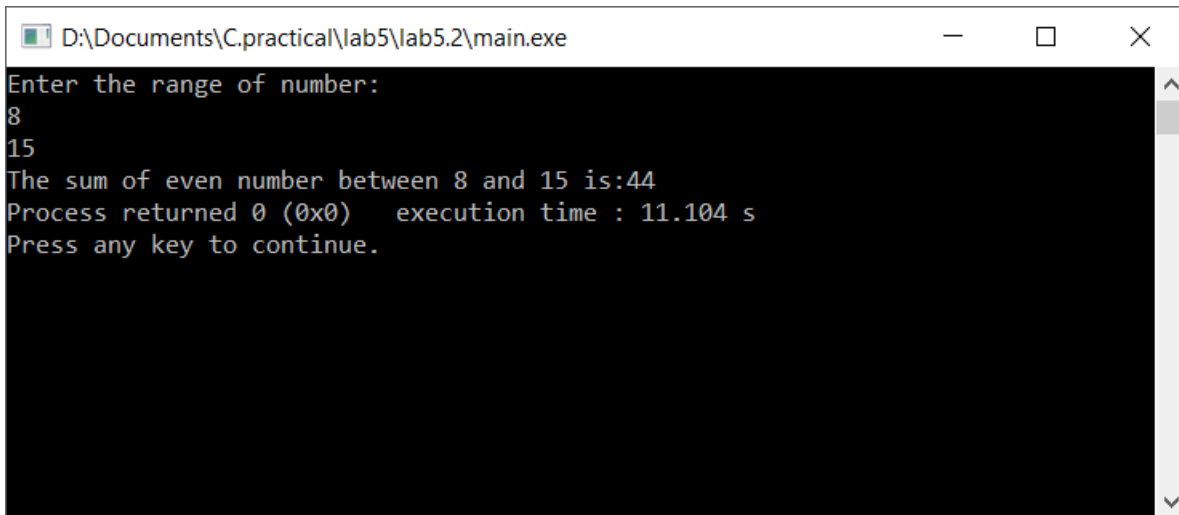
#include <stdlib.h>

int main()
{
    int n1,n2,i,j,sum=0;

    printf("Enter the range of number:\n");
    scanf("%d%d",&n1,&n2);

    if(n1>n2)        //Assigning smaller to i & greater to j
        {i=n2;
        j=n1;}
    else
    {
        i=n1;
        j=n2;
    }
    printf("The sum of even number between %d and %d is:",i,j);
    for(i;i<=j;i++)
    {
        if(i%2==0)
            sum=sum+i;
    }
    printf("%d",sum);
    return 0;
}
```


Output (Compilation, Debugging and Testing):



```
D:\Documents\C.practical\lab5\lab5.2\main.exe
Enter the range of number:
8
15
The sum of even number between 8 and 15 is:44
Process returned 0 (0x0) execution time : 11.104 s
Press any key to continue.
```

Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to understand about C data types with formatted input/output functions with if statement and for loop.

Title:

Write a program to find GCD (greates common divisor or HCF) and LCM (least common multiple) of two numbers.

Objective:

- ❖ To understand the programming using Loop & nested loop Statements (for, while, do-while) and if statement in C.

Problem Analysis:

Based on problem, it is required to define ten integer variable. Different operation should performed using if statement and for loop.

Input variables	Output variables	Necessary header files/functions/macros
n1,n2,i,j,k,x,f1,f2(int type)	gdc,lcm (int type)	stdio.h coino.h scanf() printf()

Algorithm:

1. Start
2. Define variables: n1,n2,i,j,k,x,f1,f2,gdc=0,lcm=1
3. Read n1,n2

```

    if(n2>n1)
    i=n2;
    else
    i=n1;

```

```

    for(j=2;j<=i;j++)
    {
    if(n1%j==0&& n2%j==0)
    gdc=j;

    }

```

```

    printf("GDC is=> %d\n",gdc);

```

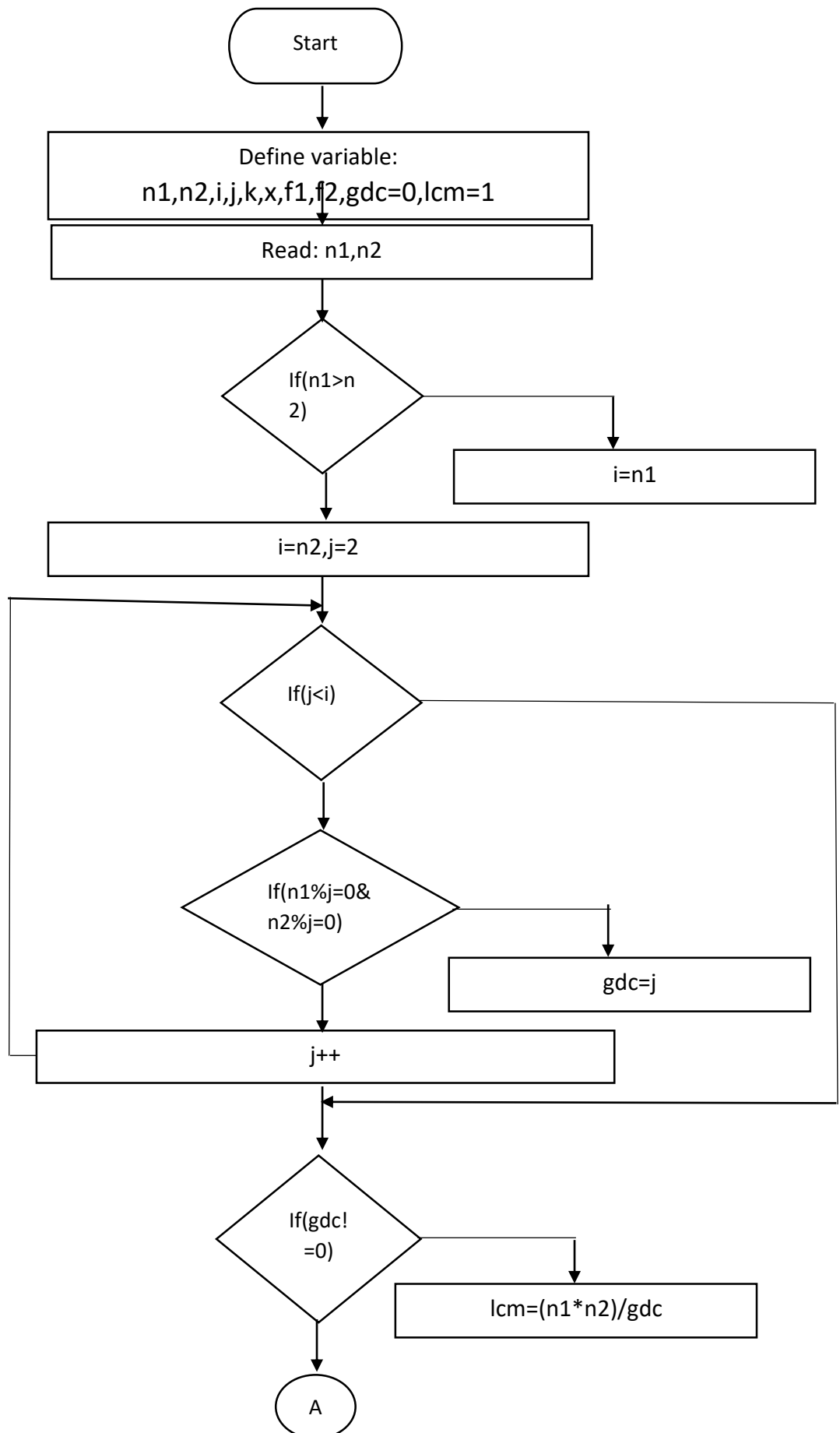
```

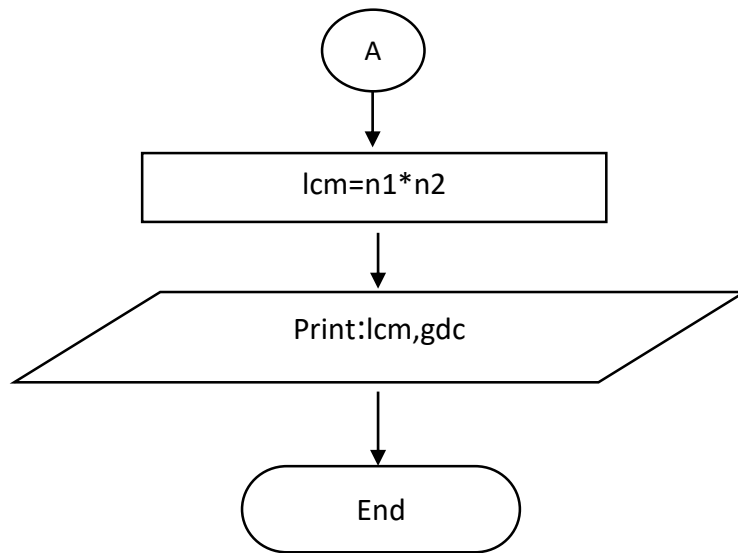
    if(gdc!=0)
    lcm=(n1*n2)/gdc;
    else
    lcm=n1*n2;

```

4. Print: lcm,gdc
5. Stop

Flowchart:





Code:

```
#include <stdio.h>
#include <stdlib.h>
```

```
void factor(int i) //calculating facctors of number
{
    int k=2;
    printf("Factors of %d are=>",i);
    {
        while(i>=2)

        {
            if(i%k==0)
            {
                i=i/k;
                printf("%d\t",k);
            }
            else
            {
                k++;
            }
        }
    }
}
```

```
}  
}
```

```
int main()
```

```
{  
    int i,j,n1,n2,x,k=2;  
    int gcd=0,lcm=1,f1,f2,g;  
  
    printf("Enter two number whose GCD and LCM is to be found:\n");  
    scanf("%d%d",&n1,&n2);  
  
    if(n2>n1)        //assigning greater number to i  
        i=n2;  
    else  
        i=n1;  
  
    for(j=2;j<=i;j++)  
    {  
        if(n1%j==0&& n2%j==0) //GDC or HCF  
            gcd=j;  
    }  
  
    printf("GDC is=> %d\n",gcd);  
  
    if(gcd!=0)  
        lcm=(n1*n2)/gcd;  
    else
```

```

    lcm=n1*n2;
    printf("LCM is=> %d\n",lcm);    //lcm=(n1*n2)/gcd

    factor(n1);
    printf("\n");
    factor(n2);
    return 0;
}

```

Output (Compilation, Debugging and Testing):

```

D:\Documents\C.practical\lab5\lab2.2(lcm&hcf)\main.exe
Enter two number whose GCD and LCM is to be found:
9
6
GDC is=> 3
LCM is=> 18
Factors of 9 are=>3 3
Factors of 6 are=>2 3
Process returned 0 (0x0) execution time : 5.109 s
Press any key to continue.

```

Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to understand about C data types with formatted input/output functions with if statement and for loop.

Title:

Write a program to display Fibonacci series of last term up to 30.

Objective:

- ❖ To understand the programming using Loop & nested loop Statements (for, while, do-while) and if statement in C.

Problem Analysis:

Based on problem, it is required to define three integer variable. Different operation should performed using if statement and for loop.

Input variables	Output variables	Necessary header files/functions/macros
n1,n2,i(int type)	nx (int type)	stdio.h coino.h scanf() printf() define n 30

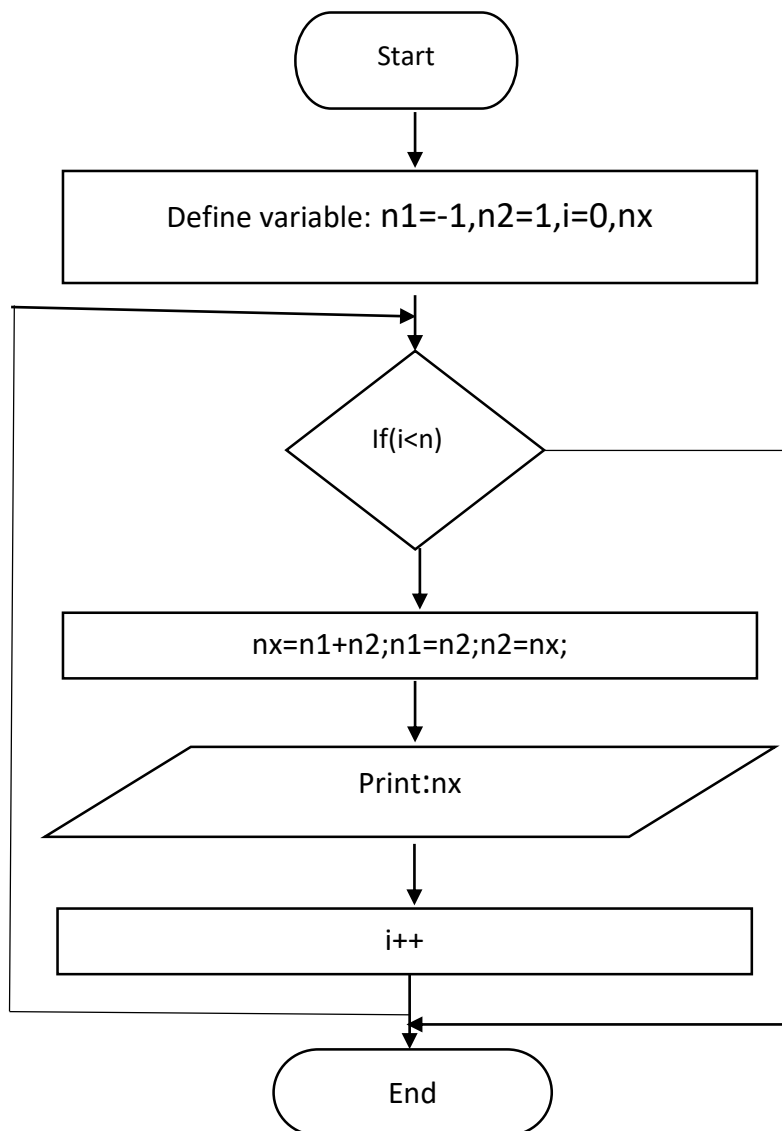
Algorithm:

1. Start
2. Define variables: n1,n2,i,nx
 for(i=0;i<n;i++)
 {

 nx=n1+n2;
 n1=n2;
 n2=nx;
 print: nx

 }
3. Stop

Flowchart:



Code:

```
#include <stdio.h>
#include <stdlib.h>
#define n 30
int main()
{
    int i,n1=-1,n2=1,nx; //to start from 1 assign n1=0

    for(i=0;i<n;i++)
```



```

{

    nx=n1+n2;

    n1=n2;

    n2=nx;

    printf("%d\t",nx);

}

return 0;

}

```

Output (Compilation, Debugging and Testing):

```

D:\Documents\C.practical\lab5\faboniss\main.exe
0      1      1      2      3      5      8      13      21      34      55      89      144      233      377
610    987    1597   2584   4181   6765   10946  17711  28657  46368  75025  121393  196418  317811  514229

Process returned 0 (0x0)   execution time : 0.031 s
Press any key to continue.

```

Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to understand about C data types with formatted input/output functions with if statement and for loop.

Title:

Write a program to display the flag of Nepal using symbolic/HEX character in C.

Objective:

- ❖ To understand the programming using Loop & nested loop Statements (for, while, do-while) and if statement in C.

Problem Analysis:

Based on problem, it is required to define two integer variable. Different operation should performed using if statement and for loop.

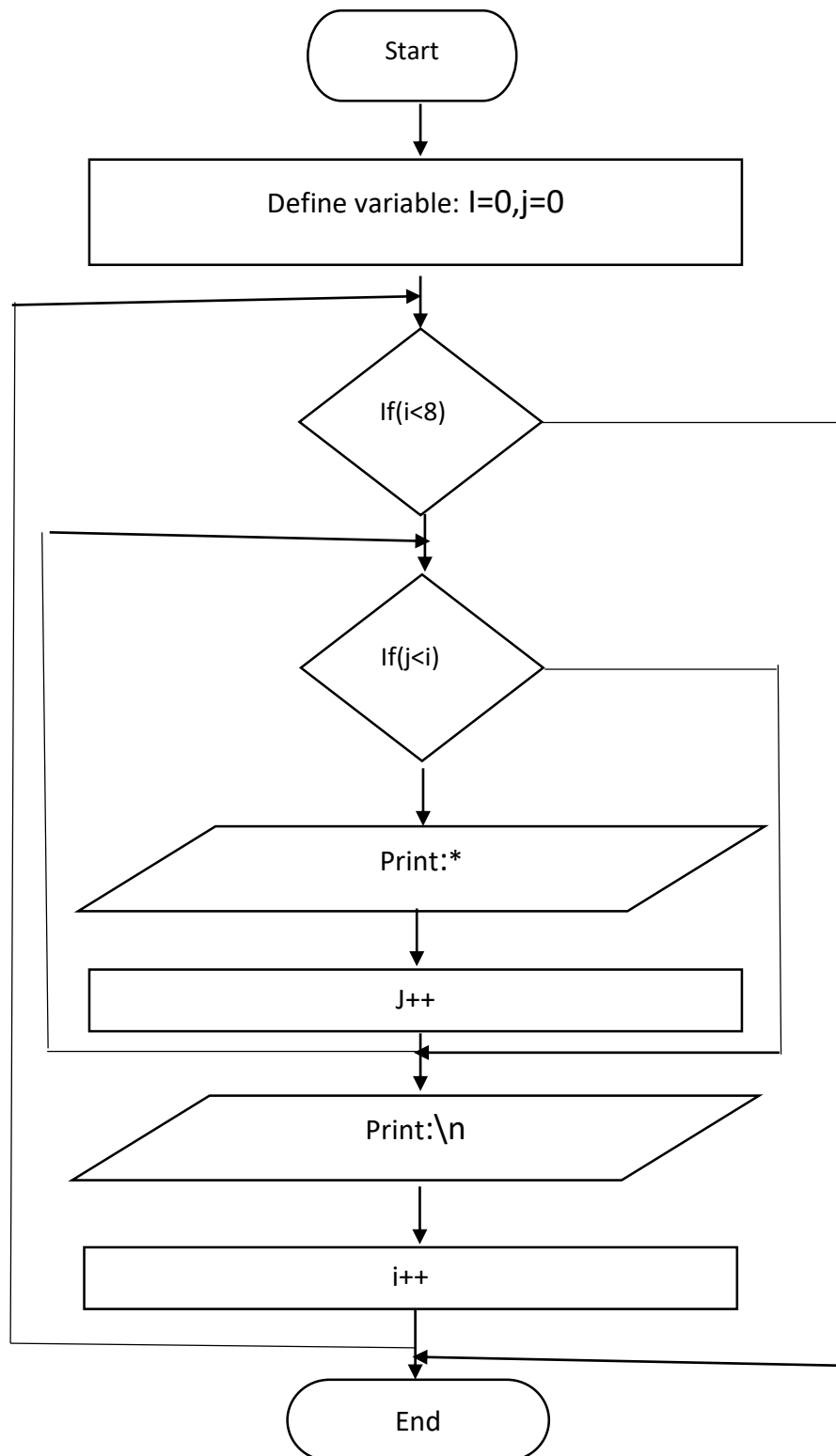
Input variables	Necessary header files/functions/macros
i,j(int type)	stdio.h coino.h printf()

Algorithm:

1. Start
2. Define variables: i,j
for(i=0;i<=8;i++)
{
for(j=0;j<=i;j++)
print: *
print:\n
}

for(i=0;i<=10;i++)
{
for(j=0;j<=i;j++)
print: *
print:\n
}
3. Stop

Flowchart:



Code:

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
int main()
```

```
{
```

```
    int i,j;
```

```
    for(i=0;i<=8;i++)
```

```
    {
```

```
        for(j=0;j<=i;j++)
```

```
            printf("*");
```

```
            printf("\n");
```

```
    }
```

```
    for(i=0;i<=10;i++)
```

```
    {
```

```
        for(j=0;j<=i;j++)
```

```
            printf("*");
```

```
        printf("\n");
```

```
    }
```

```
    return 0;
```

```
}
```

Output (Compilation, Debugging and Testing):

[illegible]

Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to understand about C data types with formatted input/output functions with if statement and for loop.

Title:

Write a program to display the following.

a.

b.

1				
1	4			
1	4	9		
1	4	9	16	
1	4	9	16	25

C.

```

*
*      *
*      *      *
*      *      *
*      *      *      *

```

d.

1	6	10	13	15
2	7	11	14	
3	8	12		
4	9			
5				

Objective:

- ❖ To understand the programming using Loop & nested loop Statements (for, while, do-while) and if statement in C.

Problem Analysis:

Based on problem, it is required to define different according to need integer variable. Different operation should performed using if statement and for loop.

Input variables	Necessary header files/functions/macros
i,j(int type)	stdio.h coino.h printf()

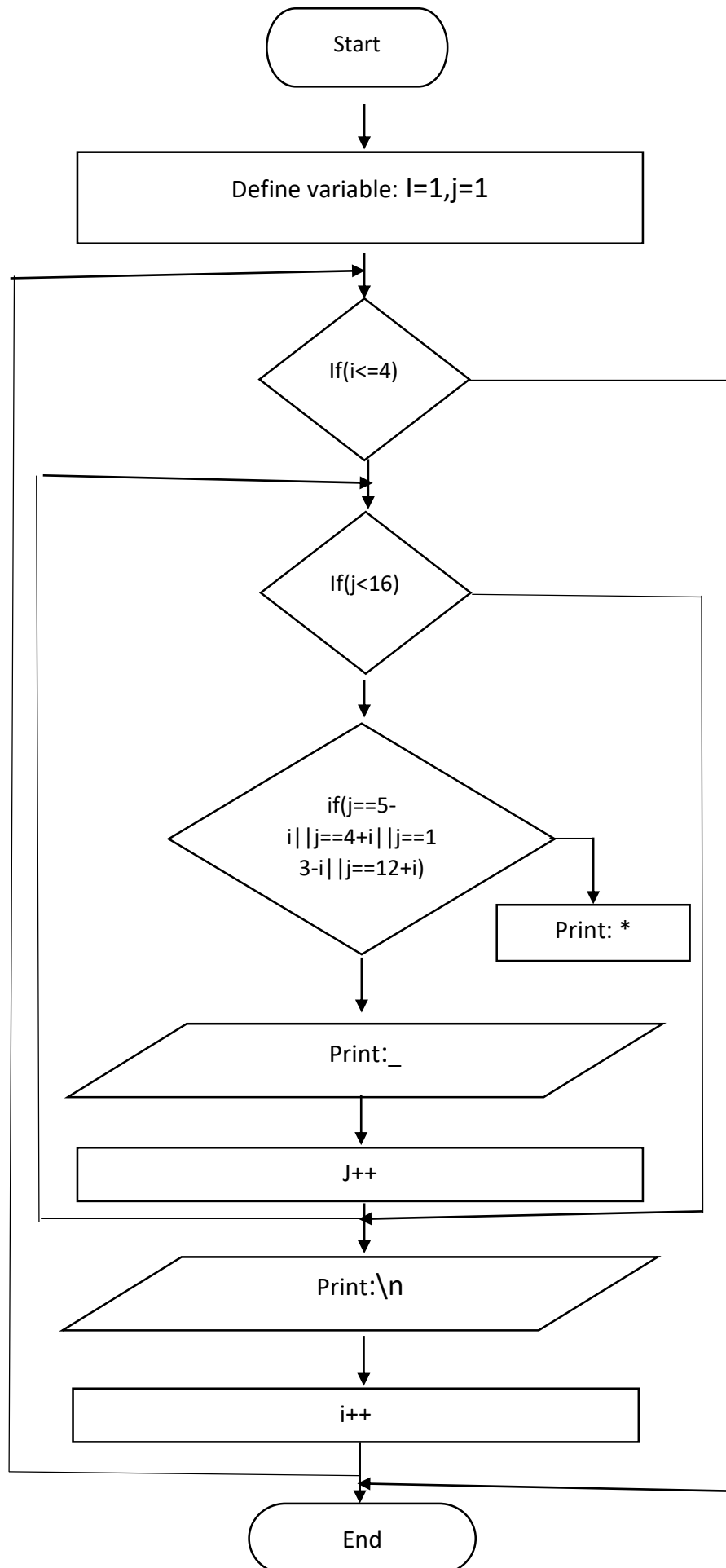
Algorithm:

1. Start
2. Define variables: i,j
for(i=1;i<=4;i++)
{
for(j=1;j<=16;j++)
{
if(j==5-i || j==4+i || j==13-i || j==12+i)
print:*
else
print:

}

Print:\n
}
3. Stop

Flowchart:



Code(a.):

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
int main()
```

```
{
```

```
    int i,j;
```

```
    for(i=1;i<=4;i++)
```

```
    {
```

```
        for(j=1;j<=16;j++)
```

```
        {
```

```
            if(j==5-i || j==4+i || j==13-i || j==12+i)
```

```
                printf(" *");
```

```
            else
```

```
                printf(" ");
```

```
        }
```

```
    printf("\n");
```

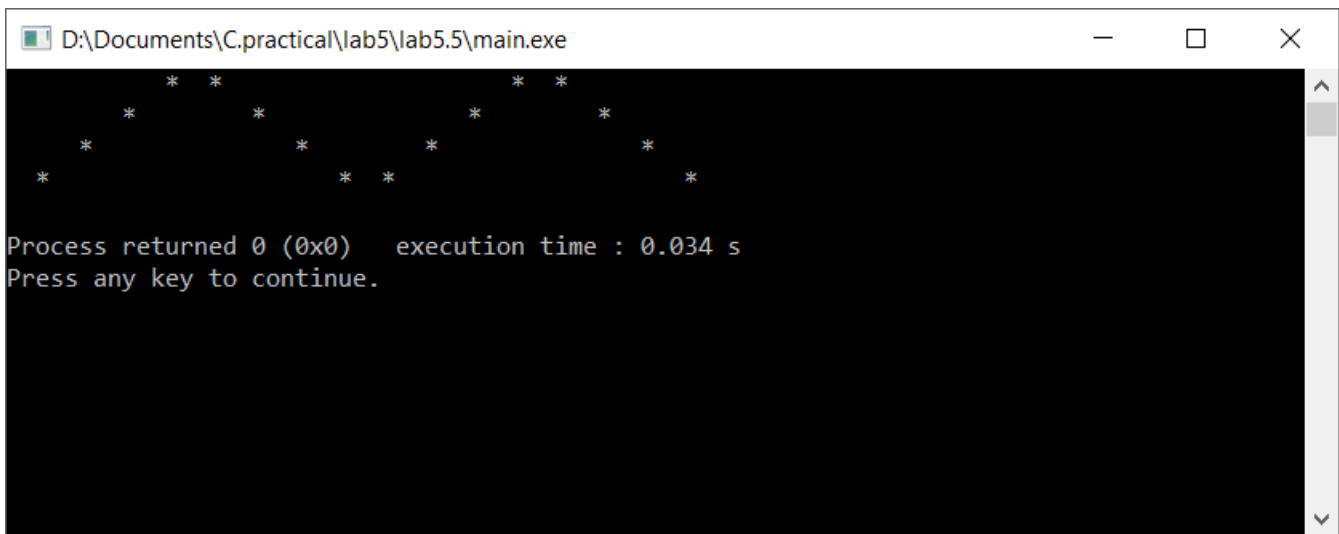
```
}
```

```
return 0;
```



```
}
```

Output (Compilation, Debugging and Testing):



```
D:\Documents\C.practical\lab5\lab5.5\main.exe

* *
* *
* *
* *
* *

Process returned 0 (0x0)   execution time : 0.034 s
Press any key to continue.
```

Code(b.):

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
int main()
```

```
{ int i,j;
```

```
for(i=1;i<=5;i++)
```

```
{
```

```
for(j=1;j<=i;j++)
```

```
{
```

```
printf("%d\t",(j*j));
```

```
}
```

```
printf("\n");
```

```
}
```

```
    return 0;
}
```

Output (Compilation, Debugging and Testing):

```
D:\Documents\C.practical\lab5\lab5.7\main.exe
1
1      4
1      4      9
1      4      9      16
1      4      9      16      25

Process returned 0 (0x0)   execution time : 0.031 s
Press any key to continue.
```

Code(c.):

```
#include <stdio.h>

#include <stdlib.h>


int main()
{
    int j,i;


    for(i=1;i<=4;i++)
    {
        for(j=0;j<i;j++)
        {
            printf("* ");
```

```

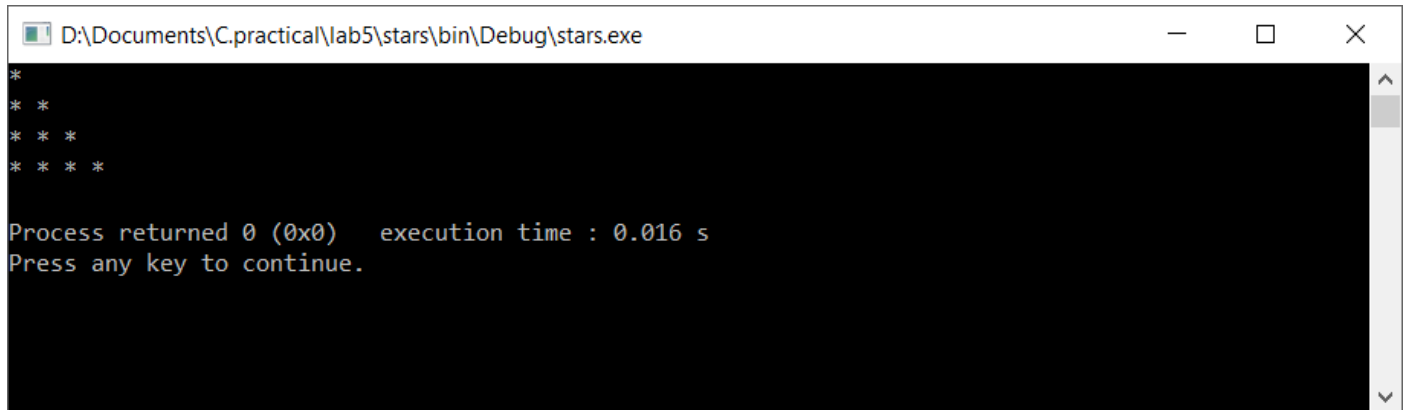
    }

    printf("\n");
}

return 0;
}

```

Output (Compilation, Debugging and Testing):



```

D:\Documents\C.practical\lab5\stars\bin\Debug\stars.exe
*
* *
* * *
* * * *

Process returned 0 (0x0)   execution time : 0.016 s
Press any key to continue.

```

Code(d.):

```

#include <stdio.h>

#include <stdlib.h>

int main()
{
    int i,j,k,x;

    for(i=1;i<=5;i++)
    {
        printf("%d\t",i);

        k=i;

        x=5;
    }
}

```

```

    for(j=5-i;j>=1;j--)
    {
        k=k+x;
        printf("%d\t",k);

        x--;
    }

    printf("\n");
}

return 0;
}

```

Output (Compilation, Debugging and Testing):

```

D:\Documents\C.practical\lab5\lab5.8\main.exe
1      6      10      13      15
2      7      11      14
3      8      12
4      9
5

Process returned 0 (0x0)   execution time : 0.031 s
Press any key to continue.

```

Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to understand about C data types with formatted input/output functions with if statement and for loop.
