ASSIGNMENT 1

Q.NO 1

Convert the following algorithm into a program and find its time complexity using the counter method.

```
void function (int n)
{
   int i= 1;
   int s =1;
   while(s <= n)
   {
       i++;
       s += i;
    }
}
```

Input:

A positive Integer n

Output:

Print the value of the counter variable

ANSWER

```
#include<stdio.h>
int function (int n)
{
   int count=0;
   int i= 1;
   count++;
   int s =1;
   count++;
   while(s <= n)
   {
       count++;
```

```
        i++;
        count++;
        s += i;
        count++;
    }
    count++;
    return count;
}
int main(){
    int e;
    scanf("%d",&e);
    int n=function(e);
    printf("%d",n);
}
```

Input	Expected	Got
9	12	12
4	9	9

Q.NO 2

Convert the following algorithm into a program and find its time complexity using the counter method.

```
void func(int n)
{
   if(n==1)
   {
     printf("*");
   }
   else
   {
    for(int i=1; i<=n; i++)
    {
      for(int j=1; j<=n; j++)
      {
         printf("*");
         printf("*");
         break;
      }
    }
  }
}
```

Note: No need of counter increment for declarations and scanf() and count variable printf() statements.

Input:

A positive Integer n

Output:

Print the value of the counter variable

ANSWER

```
#include<stdio.h>
int main()
{
   int c=0,n;
   scanf("%d",&n);
   if(n==1)
   {
     c++;
     //printf("*");
     c++;
   }
   else
   {
      c++;
    for(int i=1; i<=n; i++)
    {
      c++;
     for(int j=1; j<=n; j++)
     {
       c++;
```

```
        //printf("*");
        c++;
        //printf("*");
        c++;
        break;
      }
      c++;
    }
    c++;
  }
  printf("%d",c);
}
```

Input	Expected	Got
2	12	12
1000	5002	5002
143	717	717

Q.NO 3

Convert the following algorithm into a program and find its time complexity using the counter method.

```
void func(int n)
{
   if(n==1)
   {
     printf("*");
   }
   else
   {
    for(int i=1; i<=n; i++)
    {
      for(int j=1; j<=n; j++)
      {
         printf("*");
         printf("*");
         break;
      }
    }
  }
}
```

Note: No need of counter increment for declarations and scanf() and count variable printf() statements.

Input:

A positive Integer n

Output:
Print the value of the counter variable

ANSWER

```
#include<stdio.h>
int main()
{
   int c=0,n;
   scanf("%d",&n);
   if(n==1)
   {
     c++;
     //printf("*");
     c++;
   }
   else
   {
      c++;
    for(int i=1; i<=n; i++)
    {
      c++;
     for(int j=1; j<=n; j++)
     {
       c++;
       //printf("*");
       c++;
       //printf("*");
```

```
        c++;
        break;
      }
     c++;
    }
   c++;
  }
  printf("%d",c);
}
```

Input	Expected	Got
2	12	12
1000	5002	5002
143	717	717