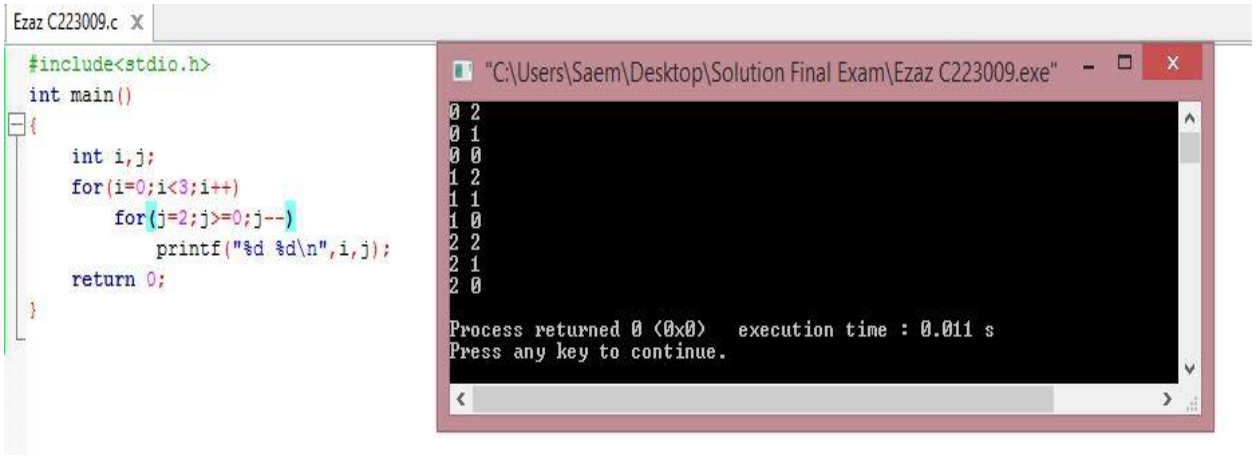
Revised CSE Final Spring 22 Solution

Name:Ezaz Ahmed ID:C223009

এখানে কিছু কোডের দুইটা করে সলিউশন আছে একটা আমার আর বিকল্প সলিউশন আমার ফ্রেন্ড FahimulC223110 এর। যে যারটা ভালো করে বুঝবা ওইটাই করবা।

1(a)

```
#include<stdio.h>
int main()
{
   int i,j;
   for(i=0;i<3;i++)
      for(j=2;j>=0;j--)
         printf("%d %d\n",i,j);
   return 0;
}
```

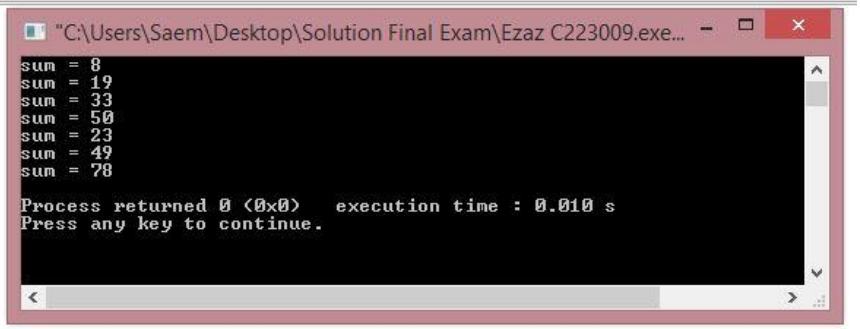


1(b)

```
#include<stdio.h>
int main()
{
   int a=8,n=30,sum=0;
   int i;
   for(i=a;i<=n;i=i+3)
   {
      if(i%5==0)
      {
         sum=0;
         continue;
      }
      sum=sum+i;
      printf("sum = %d\n",sum);
   }
return 0;}
```

Ezaz C223009.c

```c
#include<stdio.h>
int main()
{
    int a=8,n=30,sum=0;
    int i;
    for(i=a;i<=n;i=i+3)
    {
        if(i%5==0)
        {
            sum=0;
            continue;
        }
        sum=sum+i;
        printf("sum = %d\n",sum);
    }
    return 0;
}
```

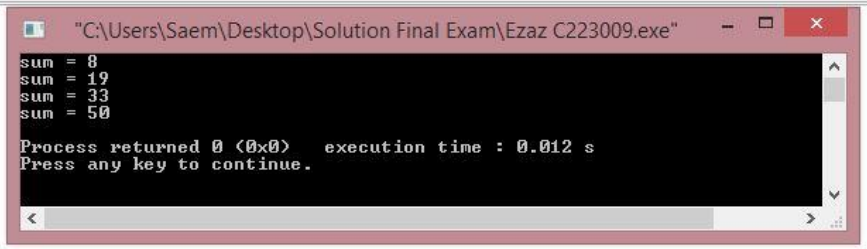


Again;

```c
#include<stdio.h>
int main()
{
   int a=8,n=30,sum=0;
   int i;
   for(i=a;i<=n;i=i+3)
   {
      if(i%5==0)
      {
         sum=0;
         break;
      }
      sum=sum+i;
      printf("sum = %d\n",sum);
   }
   return 0;
}
```

Ezaz C223009.c

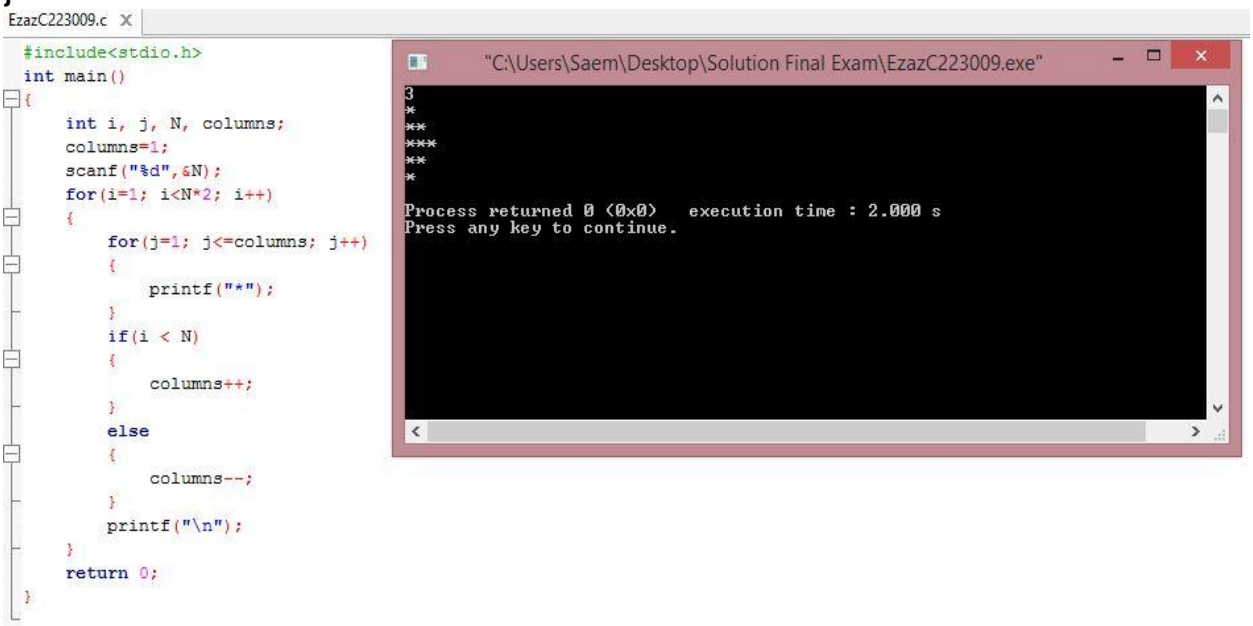
```c
#include<stdio.h>
int main()
{
    int a=8,n=30,sum=0;
    int i;
    for(i=a;i<=n;i=i+3)
    {
        if(i%5==0)
        {
            sum=0;
            break;
        }
        sum=sum+i;
        printf("sum = %d\n",sum);
    }
    return 0;
}
```



1(c):

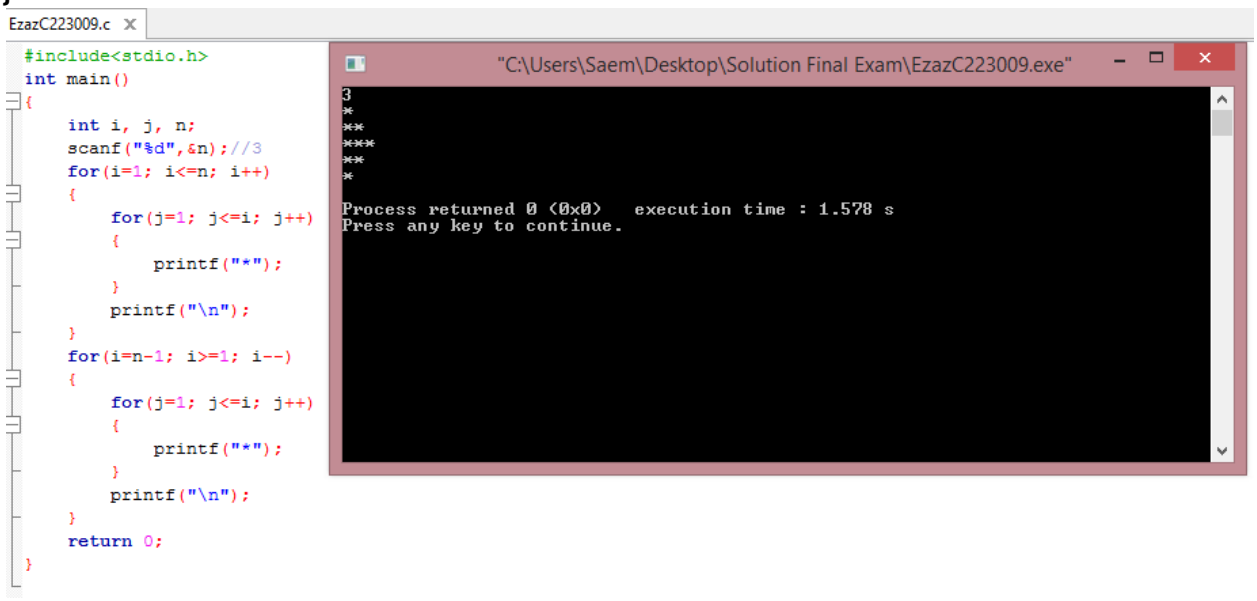
Solved By EzazC223009-

```
#include<stdio.h>
int main()
{
   int i, j, N, columns;
   columns=1;
   scanf("%d",&N);
   for(i=1; i<N*2; i++)
   {
      for(j=1; j<=columns; j++)
      {
         printf("*");
      }
      if(i < N)
      {
         columns++;
      }
      else
      {
         columns--;
      }
      printf("\n");
   }
   return 0;
}
```



Alternative Solution of 1(c) by FahimulC223110:

```
#include<stdio.h>
int main()
{
   int i, j, n;
   scanf("%d",&n);//3
   for(i=1; i<=n; i++)
   {
      for(j=1; j<=i; j++)
      {
         printf("*");
      }
      printf("\n");
   }
   for(i=n-1; i>=1; i--)
   {
      for(j=1; j<=i; j++)
      {
         printf("*");
      }
      printf("\n");
   }
   return 0;
}
```



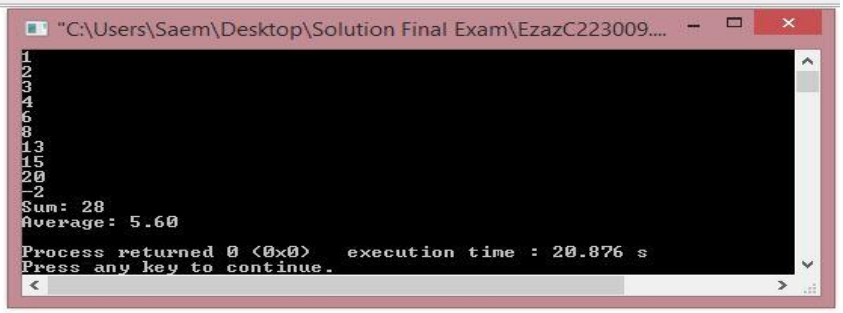
1(d)

Solved By EzazC223009-

```
#include<stdio.h>
int main()
{
   int a,i,sum=0,count=0;
   for(i=0;;i++)
   {
      scanf("%d",&a);
      if(a%3==0 || a%5==0)
      {
         continue;
      }
      else if(a<0)
         {
            break;
         }
      if(a%3!=0 || a%5!=0)
      {
         sum+=a;
         count++;
      }
   }
      double avg;
      avg=(double)sum/count;
      printf("Sum: %d\n",sum);
      printf("Average: %.2lf\n",avg);
      return 0;
}
```

EzazC223009.c

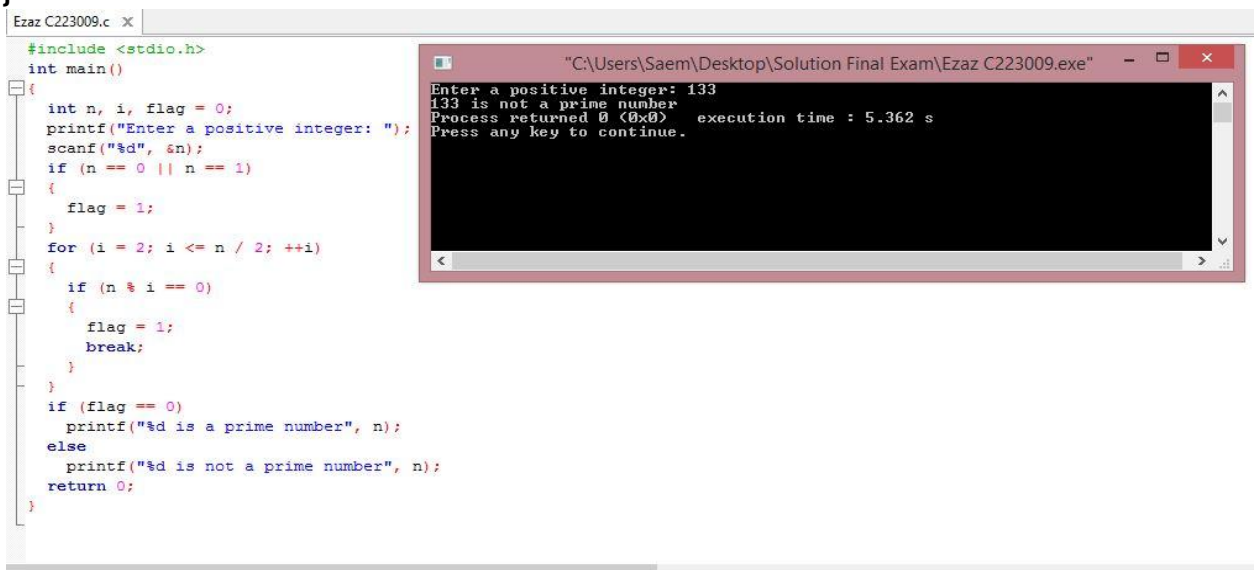
```
#include<stdio.h>
int main()
{
    int a,i,sum=0,count=0;
    for(i=0;;i++)
    {
        scanf("%d",&a);
        if(a%3==0 || a%5==0)
        {
            continue;
        }
        else if(a<0)
            {
                break;
            }
        if(a%3!=0 || a%5!=0)
        {
            sum+=a;
            count++;
        }
    }
        double avg;
        avg=(double)sum/count;
        printf("Sum: %d\n",sum);
        printf("Average: %.2lf\n",avg);
        return 0;
}
```



1(d) or;

Solved By EzazC223009-

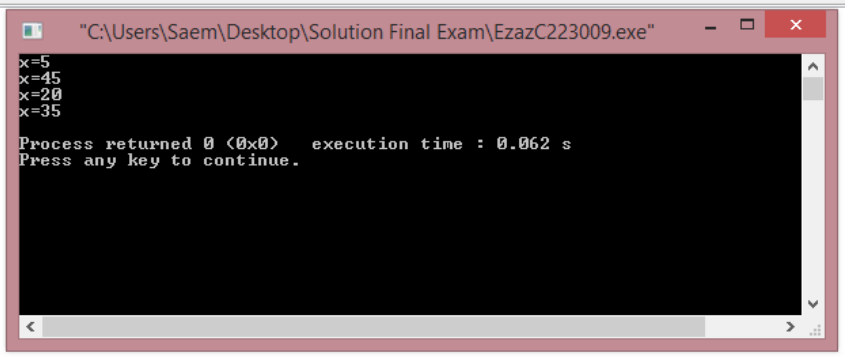
```
#include <stdio.h>
int main()
{
  int n, i, flag = 0;
  printf("Enter a positive integer: ");
  scanf("%d", &n);
  if (n == 0 || n == 1)
  {
    flag = 1;
  }
  for (i = 2; i <= n / 2; ++i)
  {
    if (n % i == 0)
    {
      flag = 1;
      break;
    }
  }
  if (flag == 0)
    printf("%d is a prime number", n);
  else
    printf("%d is not a prime number", n);
  return 0;
}
```



2(b)i:

EzazC223009.c

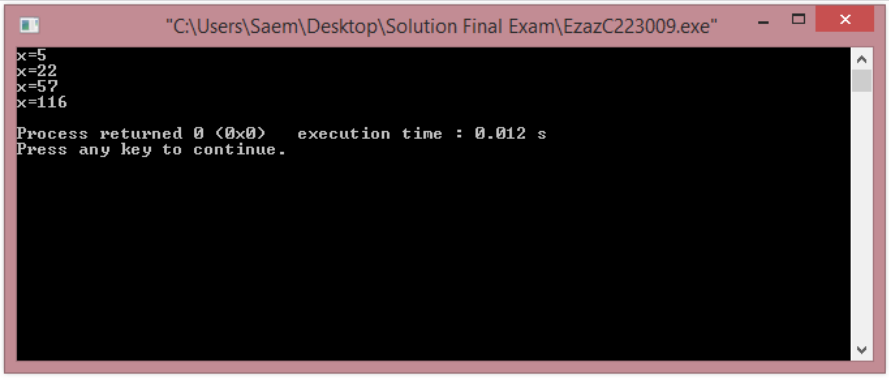
```c
#include<stdio.h>
int x=30;
int fun1( )
{
    x=x+15;
    return x;
}
int fun2( )
{
    int x=20;
    return x;
}
int fun3( )
{
    x=x-10;
    return x;
}
int main( )
{
    int x=5;
    printf("x=%d\n", x);
    printf("x=%d\n", fun1());
    printf("x=%d\n", fun2());
    printf("x=%d\n", fun3());
    return 0;
}
```



2(b)ii:

EzazC223009.c

```c
#include<stdio.h>
int x,q=1;
void ctg(int x)
{
    static int j=1;
    x*=j;
    printf("x=%d\n",x);
    j++;
}
int main()
{
    int i;
    for(i=2;i<=5;i++)
    {
        ctg(i*i+q);
        q++;
    }
    return 0;
}
```



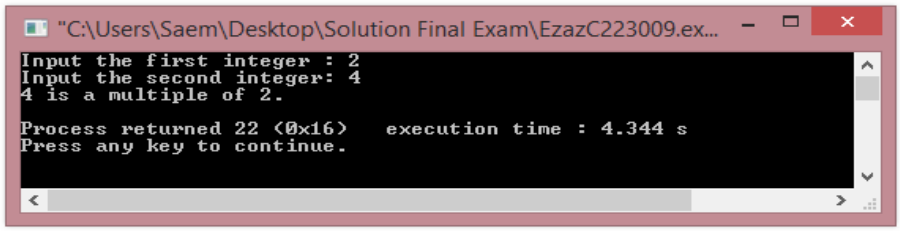
2(d)

Solved By EzazC223009-

```
#include<stdio.h>
int is_Multiple(int n1, int n2)
{
   if(n2%n1==0)
   {
      return 1;
   }
   else
   {
      return 0;
   }
}
void main()
{
   int n1, n2;
   printf("Input the first integer : ");
   scanf("%d", &n1);
   printf("Input the second integer: ");
   scanf("%d", &n2);
   if(is_Multiple(n1, n2)==1)
      printf("%d is a multiple of %d.\n", n2, n1);
   else
      printf("%d is not a multiple of %d.\n", n2, n1);
      return 0;
}
```

EzazC223009.c

```
#include<stdio.h>
int is_Multiple(int n1, int n2)
{
    if(n2%n1==0)
    {
        return 1;
    }
    else
    {
        return 0;
    }
}
void main()
{
    int n1, n2;
    printf("Input the first integer : ");
    scanf("%d", &n1);
    printf("Input the second integer: ");
    scanf("%d", &n2);
    if(is_Multiple(n1, n2)==1)
        printf("%d is a multiple of %d.\n", n2, n1);
    else
        printf("%d is not a multiple of %d.\n", n2, n1);
        return 0;
}
```



2(d) or:

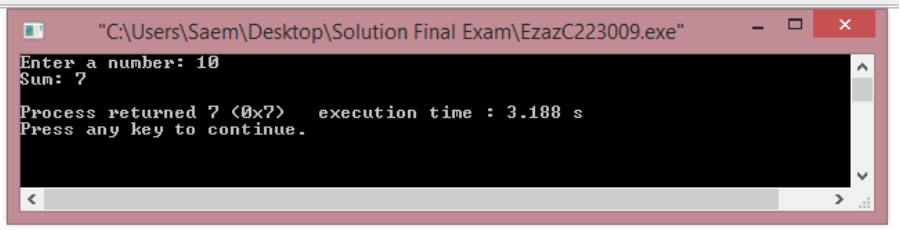
Solved By EzazC223009-

```
#include <stdio.h>
void main()
{
int number,sum;
printf("Enter a number: ");
scanf("%d", &number);
sum=factors(number);
printf("Sum: %d\n",sum);
}
int factors(int number)
{
  int i,sum=0;
  for (int i = 1; i <= number; i++)
   {
     if (number % i == 0)
       {
         if(i!=1 && i!=number)
              {
                 sum=sum+i;
              }
       }
   }
   return(sum);
}
```

আমি এর আগের পিডিএফ এ Return Statement এর ব্যবহার ছাড়াই কোডটি সলভ করেছিলাম। বাট প্রশ্নে Return Statement দিয়ে করতে বলেছে।

EzazC223009.c

```
#include <stdio.h>
void main()
{
int number,sum;
printf("Enter a number: ");
scanf("%d", &number);
sum=factors(number);
printf("Sum: %d\n",sum);
}
int factors(int number)
{
   int i,sum=0;
   for (int i = 1; i <= number; i++)
    {
       if (number % i == 0)
          {
             if(i!=1 && i!=number)
                   {
                       sum=sum+i;
                   }
          }
    }
    return(sum);
}
```

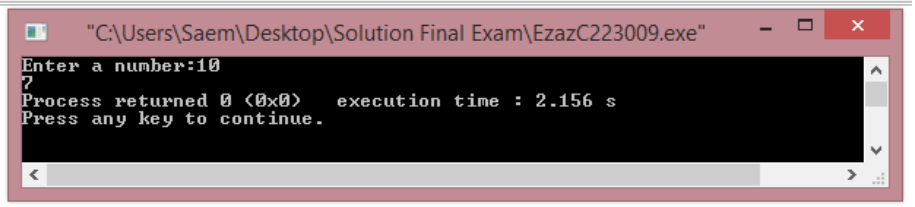


Alternative Solution of 2(d)or By FahimulC223110:

```
#include<stdio.h>
int sum_factors(int n)
{
   int sum;
   for(int i=2; i<n; i++)
   {
      if(n%i==0)
         sum+=i;
   }
   return sum;
}
int main()
{
   int a,x;
   printf("Enter a number:");
   scanf("%d",&a);
   x=sum_factors(a);
   printf("%d",x);
}
```

EzazC223009.c

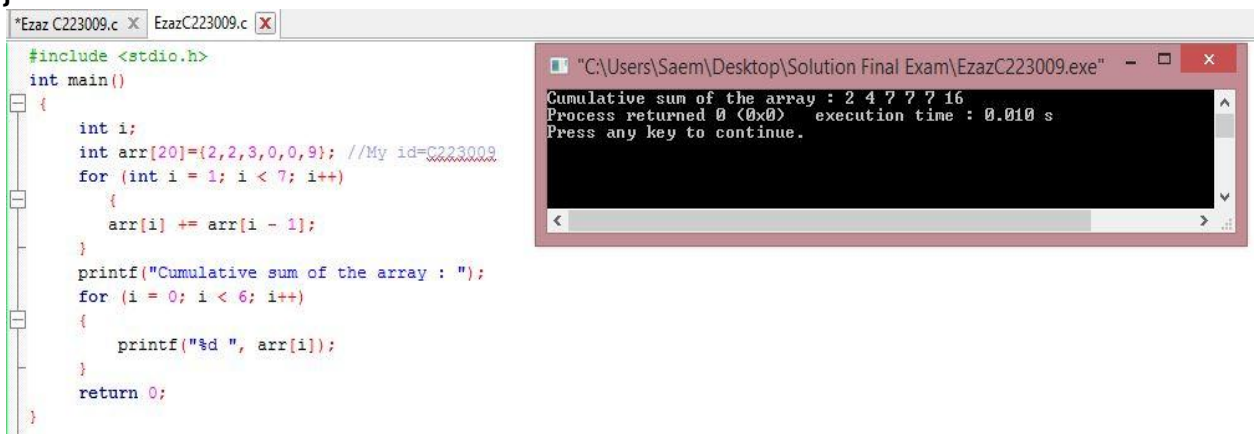
```
#include<stdio.h>
int sum_factors(int n)
{
    int sum;
    for(int i=2; i<n; i++)
    {
        if(n%i==0)
            sum+=i;
    }
    return sum;
}
int main()
{
    int a,x;
    printf("Enter a number:");
    scanf("%d",&a);
    x=sum_factors(a);
    printf("%d",x);
}
```



3(a)

Solved By EzazC223009-

```
#include <stdio.h>
int main()
 {
    int i;
    int arr[20]={2,2,3,0,0,9}; //My id=C223009
    for (int i = 1; i < 7; i++)
      {
      arr[i] += arr[i - 1];
    }
    printf("Cumulative sum of the array : ");
    for (i = 0; i < 6; i++)
    {
       printf("%d ", arr[i]);
    }
    return 0;
}
```

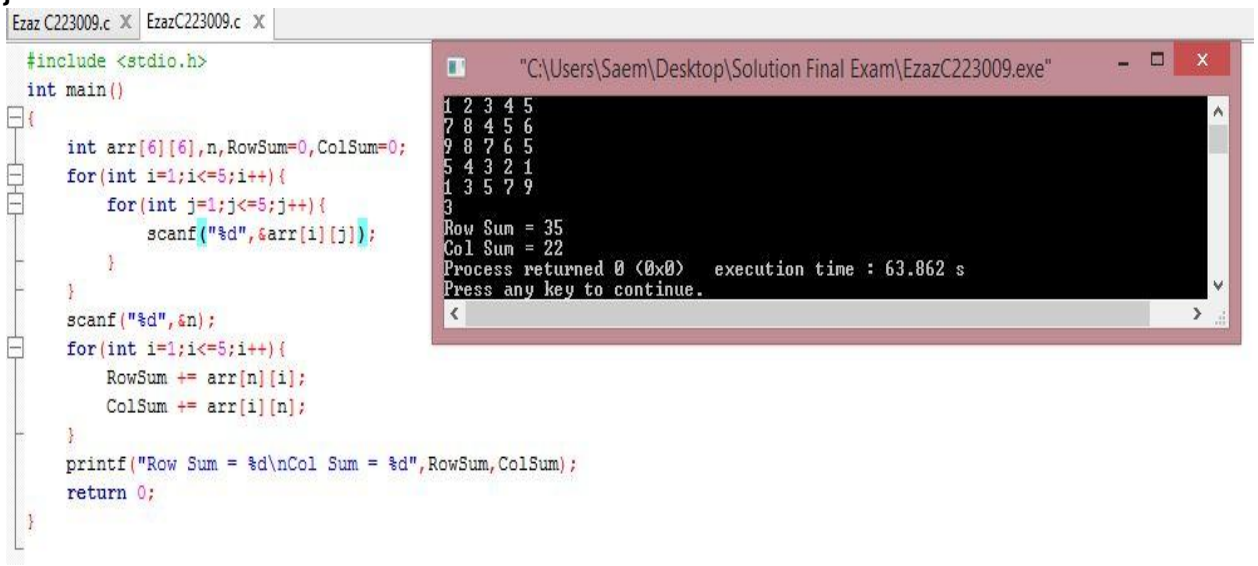


Go to the next page

3(b):

Solved By EzazC223009-

```
#include <stdio.h>
int main()
{
   int arr[6][6],n,RowSum=0,ColSum=0;
   for(int i=1;i<=5;i++){
      for(int j=1;j<=5;j++){
         scanf("%d",&arr[i][j]);
      }
   }
   scanf("%d",&n);
   for(int i=1;i<=5;i++){
      RowSum += arr[n][i];
      ColSum += arr[i][n];
   }
   printf("Row Sum = %d\nCol Sum = %d",RowSum,ColSum);
   return 0;
}
```

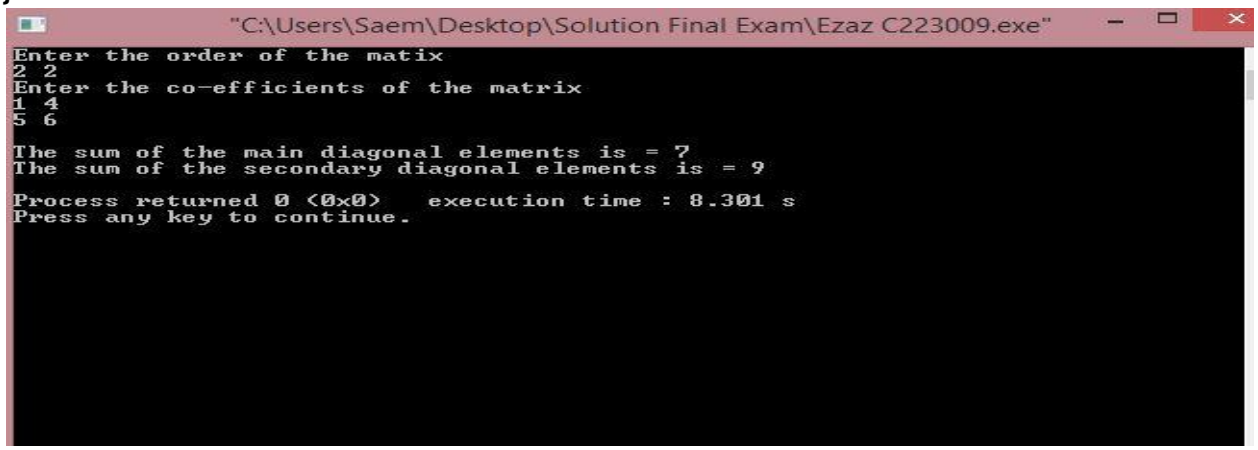


Go to the next page

3(b) or:

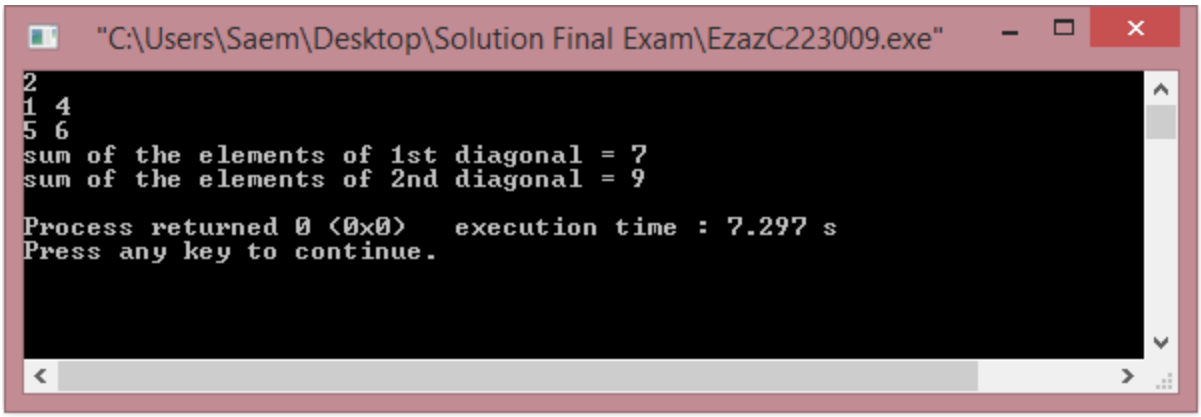
Solved By EzazC223009-

```
#include <stdio.h>
int main()
{
   int array[100][100];
   int i, j, m, n, a = 0, sum = 0;
   printf("Enter the order of the matix \n");
   scanf("%d %d", &m, &n);
      if (m == n )
      {
         printf("Enter the co-efficients of the matrix\n");
         for (i = 0; i < m; ++i)
         {
            for (j = 0; j < n; ++j)
            {
               scanf("%d", &array[i][j]);
            }
         }
         for (i = 0; i < m; ++i)
         {
            sum = sum + array[i][i];
            a = a + array[i][m - i - 1];
         }
         printf("\nThe sum of the main diagonal elements is = %d\n", sum);
         printf("The sum of the secondary diagonal elements is = %d\n", a);
         }
      else
         printf("The given order is not square matrix\n");
      return 0;
}
```



Alternative Solution of 3(b)or By FahimulC223110:

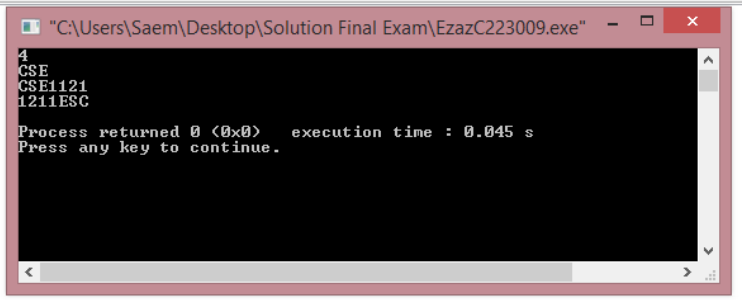
```
#include <stdio.h>
#include<math.h>
int main()
{
   int i, j, n, k, sum1 = 0,sum2=0;
   scanf("%d", &n);
   int a[n + 5][n + 5];
   for (i = 0; i < n; i++)
   {
      for (j = 0; j < n; j++)
      {
         scanf("%d", &a[i][j]);
      }
   }
   for (i = 0; i < n; i++)
   {
      for (j = 0; j < n; j++)
      {
         if (i == j)
         {
            sum1 += a[i][j];
         }
      }
   }
   for (i = 0; i < n; i++)
   {
      for (j = 0; j < n; j++)
      {
         if (i+j == n-1)
         {
            sum2 += a[i][j];
         }
      }
   }
   printf("sum of the elements of 1st diagonal = %d\n",sum1);
   printf("sum of the elements of 2nd diagonal = %d\n",sum2);
   return 0;
}
```



3(c):

EzazC223009.c

```c
#include<stdio.h>
#include<string.h>
int main()
{
    char s1[8]="IIUC",s2[8]="CSE",s3[8]="1121";
    printf("%d\n",strlen(s1));
    printf("%s\n",strcpy(s1,s2));
    printf("%s\n",strcat(s2,s3));
    printf("%s\n",strrev(s2));
    return 0;
}
```



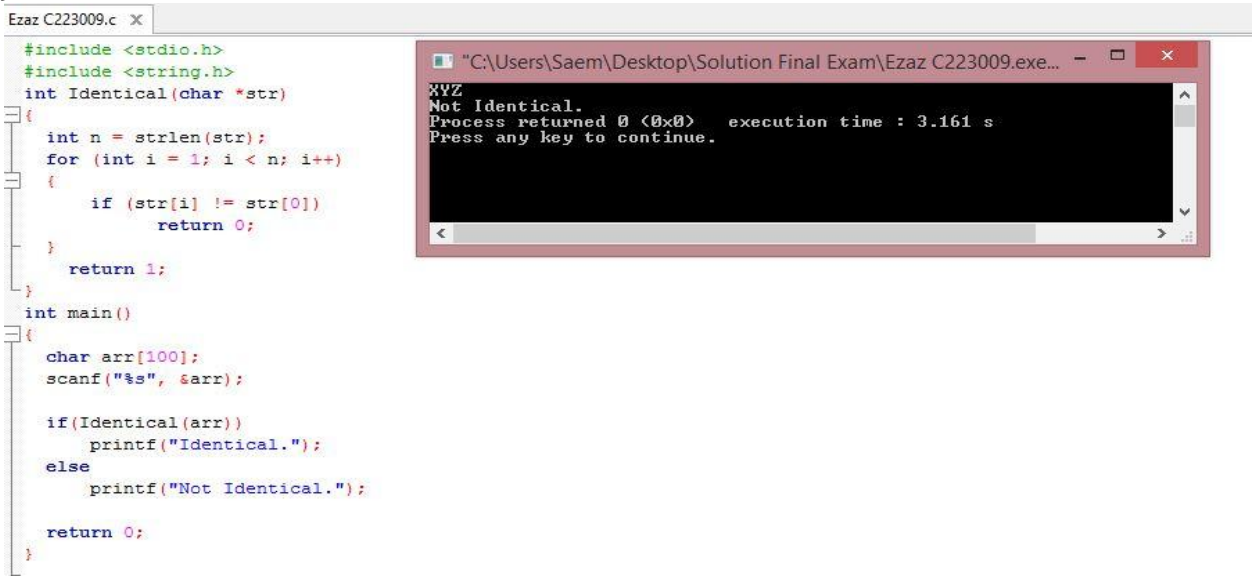
3(d)

Solved By EzazC223009-

```
#include <stdio.h>
#include <string.h>
int Identical(char *str)
{
  int n = strlen(str);
  for (int i = 1; i < n; i++)
  {
     if (str[i] != str[0])
          return 0;
  }
    return 1;
}
int main()
{
  char arr[100];
  scanf("%s", &arr);

  if(Identical(arr))
     printf("Identical.");
  else
     printf("Not Identical.");

  return 0;
}
```

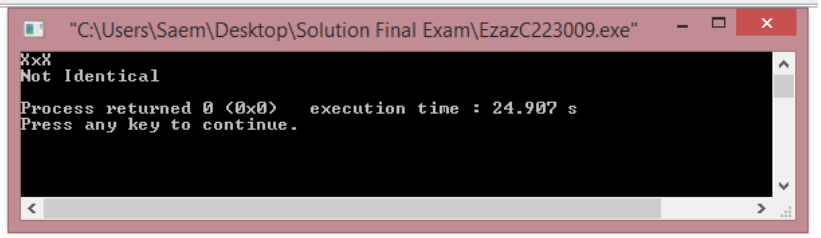


Alternative Solution of 3(d) By FahimulC223110:

```
#include<stdio.h>
#include<string.h>
int main()
{
   char str[100];
   int i,f = 1;
   scanf("%s",str);
   for(int i = 0; i<strlen(str); i++)
   {
      if(str[0] != str[i])
      {
         f = 0;
         break;
      }
   }
   if(f==0)
   {
      printf("Not Identical\n");
   }
   else
   {
      printf("Identical\n");
   }
   return 0;
}
```

EzazC223009.c

```
#include<stdio.h>
#include<string.h>
int main()
{
    char str[100];
    int i,f = 1;
    scanf("%s",str);
    for(int i = 0; i<strlen(str); i++)
    {
        if(str[0] != str[i])
        {
            f = 0;
            break;
        }
    }
    if(f==0)
    {
        printf("Not Identical\n");
    }
    else
    {
        printf("Identical\n");
    }
    return 0;
}
```



3(d) or;

Solved By EzazC223009-

```
#include<stdio.h>
int main()
{
   char s[100];
   scanf("%s",&s);
   if(s[2]=='T' && s[3]=='N')
   {
      printf("Age=%c%c,Taxpayer,Not a Landowner",s[0],s[1]);
   }
   else if(s[2]=='T' && s[3]=='L')
   {
      printf("Age=%c%c,Taxpayer,Landowner",s[0],s[1]);
   }
   else if(s[2]=='N' && s[3]=='N')
   {
      printf("Age=%c%c,Not a Taxpayer,Not a Landowner",s[0],s[1]);
   }
   else if(s[2]=='N' && s[3]=='L')
   {
      printf("Age=%c%c,Not a Taxpayer,Landowner",s[0],s[1]);
   }
   return 0;
}
```

4(b): The **main difference** between pass by value and pass by reference is that, **in a pass by value, the parameter value copies to another variable while, in a pass by reference, the actual parameter passes to the function.**

Example:

Pass by Value:

```
#include <stdio.h>
void swap (int a, int b)
{
   int temp = a;
   a = b;
   b = temp;
}
int main ()
{
   int a = 10;
   int b = 20;
   printf ("Before swap, a = %d, b = %d\n", a, b);
   swap (a, b);
   printf ("After swap, a = %d, b = %d\n", a, b);
   return 0;
}
```

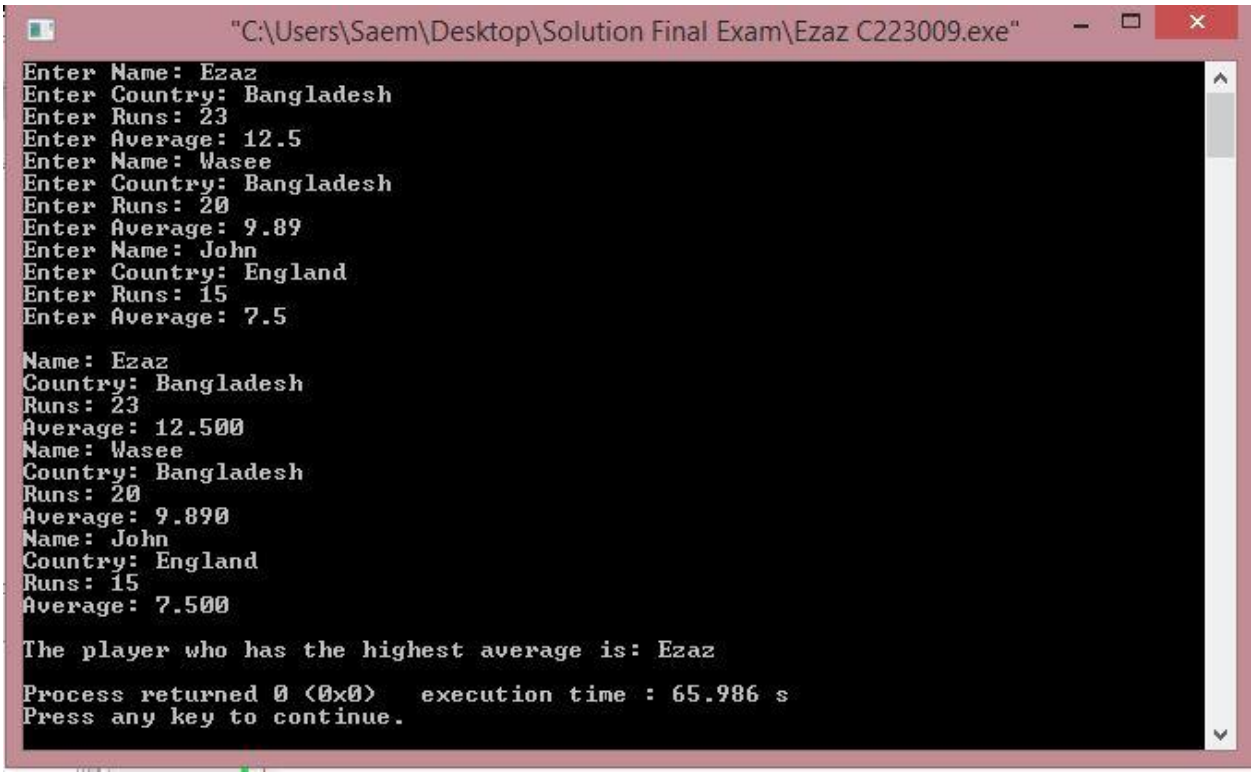
Pass By Reference:

```
#include <stdio.h>
int main ()
{
   int a = 100;
   int b = 200;
   printf("Before swap, value of a : %d\n", a );
   printf("Before swap, value of b : %d\n", b );
   swap(&a, &b);
   printf("After swap, value of a : %d\n", a );
   printf("After swap, value of b : %d\n", b );
   return 0;
}
void swap(int *x, int *y)
{
   int temp;
   temp = *x;
   *x = *y;
   *y = temp;
   return;
}
```

4(d)

Solved By EzazC223009-

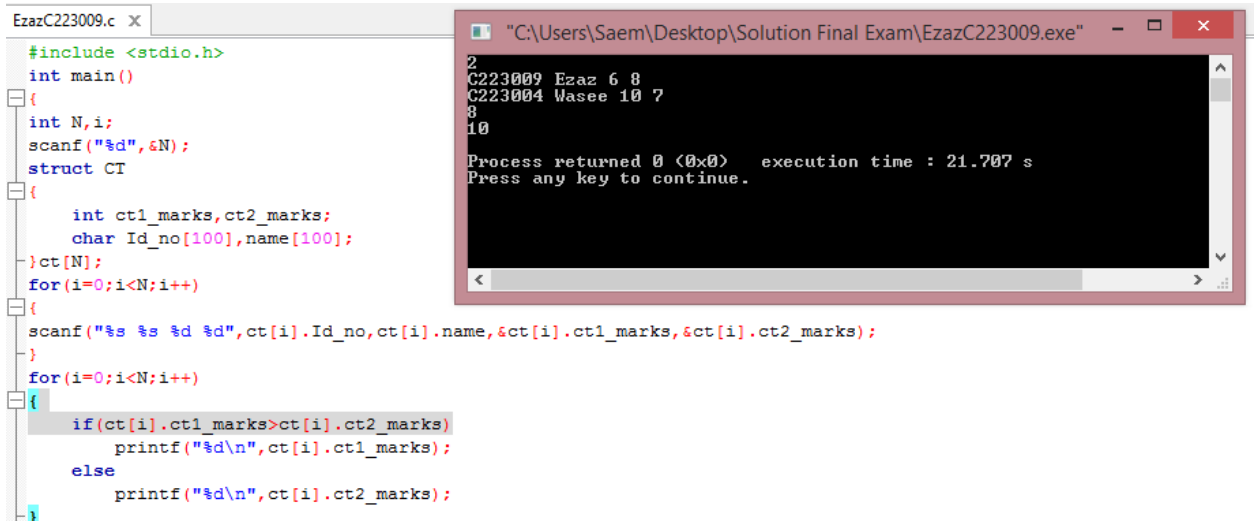
```
#include <stdio.h>
int main()
{
struct Player
{
    int runs;
    char name[24],country[16];
    double average;
}
player[10];
int i;
for(i=0;i<10;i++)
{
printf("Enter Name: ");
scanf("%s",player[i].name);
printf("Enter Country: ");
scanf("%s",&player[i].country);
printf("Enter Runs: ");
scanf("%d",&player[i].runs);
printf("Enter Average: ");
scanf("%lf",&player[i].average);
}
for(i=0;i<10;i++)
{
printf("\nName: %s",player[i].name);
printf("\nCountry: %s",player[i].country);
printf("\nRuns: %d",player[i].runs);
printf("\nAverage: %.3lf",player[i].average);
}
int max;
max=0;
for(i=0;i<10;i++)
{
   if(player[i].average>player[max].average)
   {
      max=i;
   }
}
printf("\n\nThe player who has the highest average is: %s\n",player[max].name);
return 0;
}
```



আমি এখানে আউটপুট টা দেখানোর জন্য শুধু ৩টা ইনপুট নিয়েছি। বাট কোডে ১০ জনের ইনপুট নিয়েছি।

Go to the Next Page:

4(d) or:




```
#include <stdio.h>
int main()
{
int N,i;
scanf("%d",&N);
struct CT
{
    int ct1_marks,ct2_marks;
    char Id_no[100],name[100];
}ct[N];
for(i=0;i<N;i++)
{
scanf("%s %s %d %d",ct[i].Id_no,ct[i].name,&ct[i].ct1_marks,&ct[i].ct2_marks);
}
for(i=0;i<N;i++)
{
  if(ct[i].ct1_marks>ct[i].ct2_marks)
     printf("%d\n",ct[i].ct1_marks);
  else
     printf("%d\n",ct[i].ct2_marks);
}
return 0;
}
```

5(a):

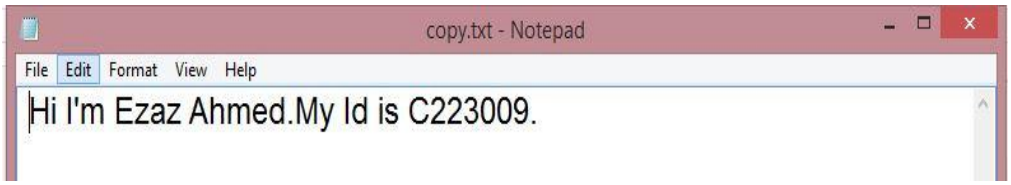
feof() function is used to determine if the end of the file (stream) specified has been reached or not. This function keeps on searching the end of the file (EOF) in the file program.

5(b):

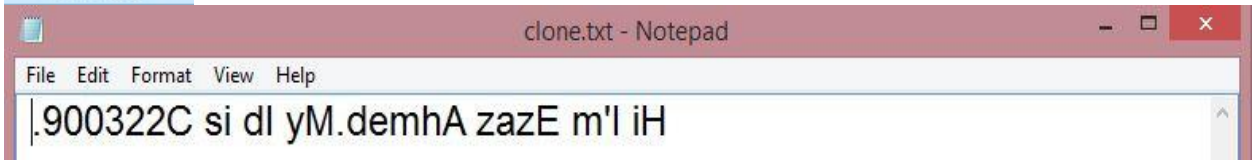
Solved By EzazC223009-

যদি প্রশ্নে strrev() use না করে কোড সলভ করতে বলে তাহলে এভাবে করতে হবেঃ

```
#include<stdio.h>
int main()
{
    FILE *fp;
    FILE *rev;
    char ch;
    int i=0,pos;
    fp=fopen("copy.txt","r");
    rev=fopen("clone.txt","w");
    if(fp==NULL)
    {
        printf("File does not exist..");
        return 0;
    }
    fseek(fp,0,SEEK_END);
    pos=ftell(fp);
    while(i<pos)
     {
        i++;
        fseek(fp,-i,SEEK_END);
        ch=fgetc(fp);
        fputc(ch,rev);
    }
    fclose(fp);
    fclose(rev);
    return 0;
}
```



After executing the code

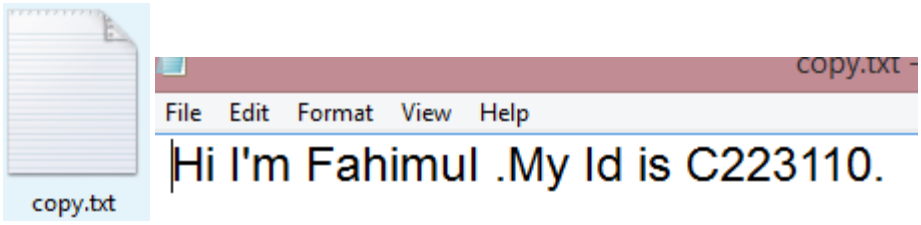


Go to the Next Page:

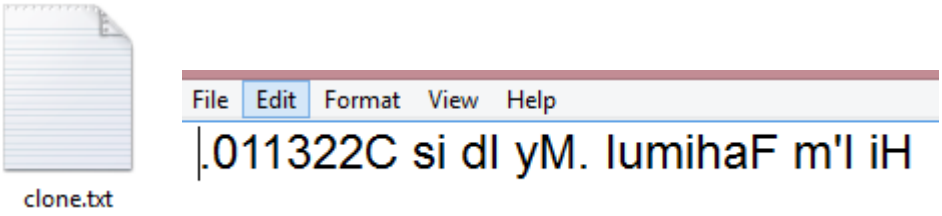
Alternative Solution of 5(b) By FahimulC223110:

যদি প্রশ্নে strrev() ও use করা যাবে থাকেঃ

```
#include<stdio.h>
#include<string.h>
int main()
{
   char str[100],clone[100];
   FILE *fr;
   fr  =  fopen("copy.txt", "r");
    if(fr==NULL)
    {
        printf("File does not exist..");
        return 0;
    }
   fgets(str,100,fr);
   fclose(fr);
   FILE *fw  =  fopen("clone.txt", "w");
   strcpy(clone,strrev(str));
   fprintf( fw,"%s", clone);
   fclose(fw);
   return 0;
}
```



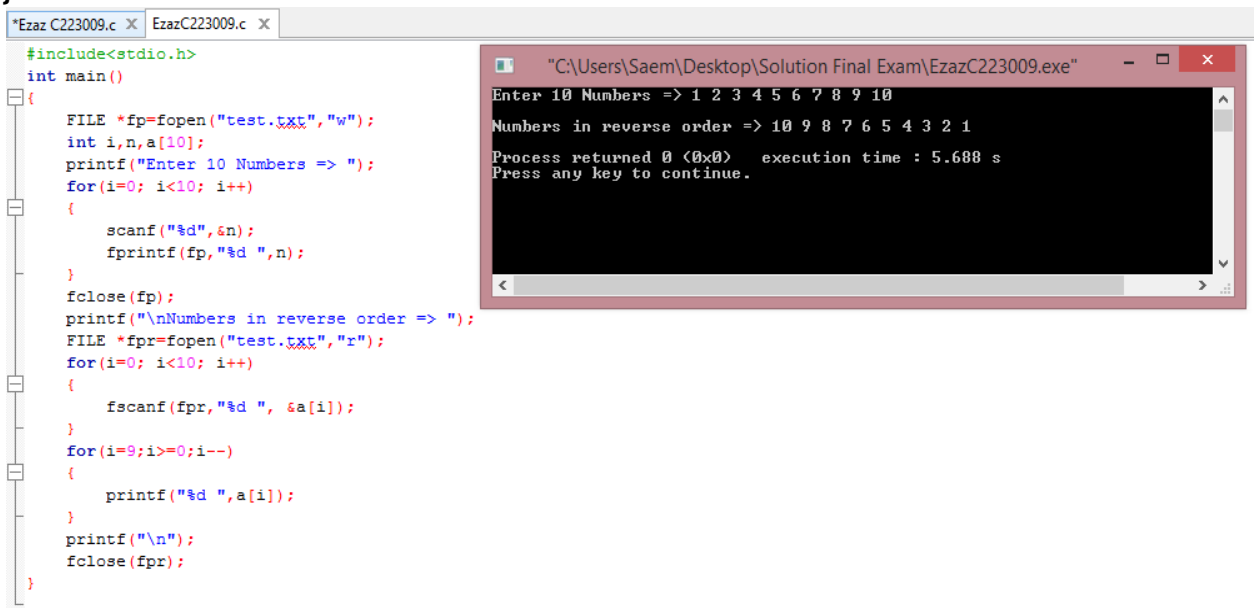
After executing the code



5(b) or:

Solved By EzazC223009-

```
#include<stdio.h>
int main()
{
   FILE *fp=fopen("test.txt","w");
   int i,n,a[10];
   printf("Enter 10 Numbers => ");
   for(i=0; i<10; i++)
   {
      scanf("%d",&n);
      fprintf(fp,"%d ",n);
   }
   fclose(fp);
   printf("\nNumbers in reverse order => ");
   FILE *fpr=fopen("test.txt","r");
   for(i=0; i<10; i++)
   {
      fscanf(fpr,"%d ", &a[i]);
   }
   for(i=9;i>=0;i--)
   {
      printf("%d ",a[i]);
   }
   printf("\n");
   fclose(fpr);
}
```

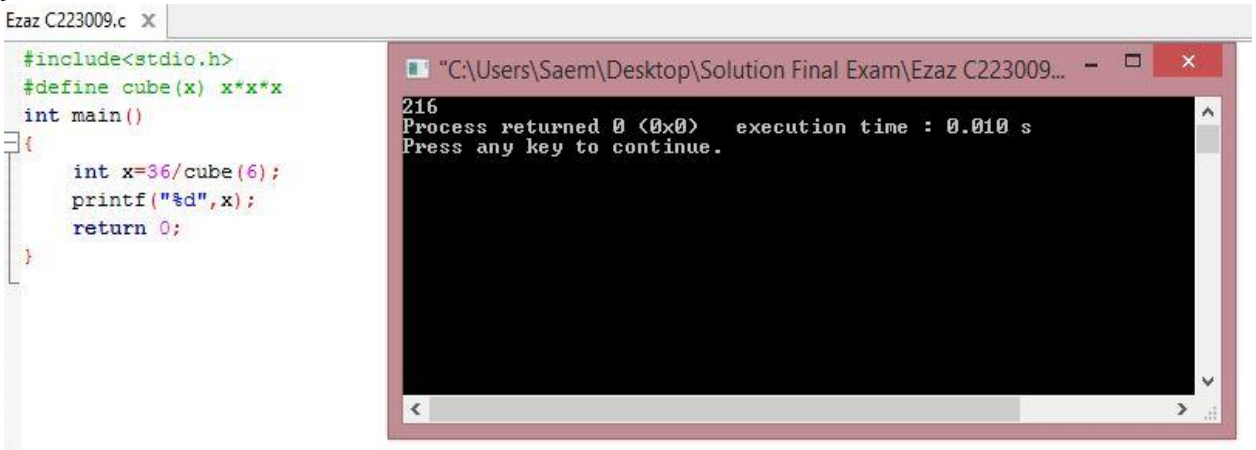


5(d) i:

```
#include <stdio.h>
#define MULTI(x,y) x*y
int main()
{
   printf("%d ",MULTI(2+3,3+5));
   return 0;
}
```

5(d) ii:

```
#include<stdio.h>
#define cube(x) x*x*x
int main()
{
   int x=36/cube(6);
   printf("%d",x);
   return 0;
}
```



Thanks Everyone Assalamualikum