ITERATIVE FUNCTION EXERCISES

1- In your program user will enter a number and a function in your program will define whether the number is prime or not.

```
#include<stdio.h>

int primeNumber(int n)
{
	for(int i=2; i<n/2; i++)
	{
		if(n%i==0)
			return 0;
	}
	return 1;
}

int main()
{
	int number;
	int control;

	printf("Enter a number:");
	scanf("%d",&number);

	control=primeNumber(number);
	if(control==0)
		printf("Number %d is NOT a prime number\n",number);
	else
		printf("Number %d is a prime number\n",number);

	return 0;
}
```

Output samples of the code:

```
Enter a number:11
Number 11 is a prime number
```

```
Enter a number:12
Number 12 is NOT a prime number
```

2- A function in your program will calculate the area of a circle whose radius is entered by the user.

```
#include<stdio.h>
#include<math.h>
#define PI 3.14

double circleArea(int radius)
{
	return PI*pow(radius,2); //pow(radius,2)==radius*radius
}

int main()
{
	int radius;
	printf("Enter the radius:");
	scanf("%d",&radius);

	printf("Area of the circle=%.2lf\n",circleArea(radius));

	return 0;
}
```

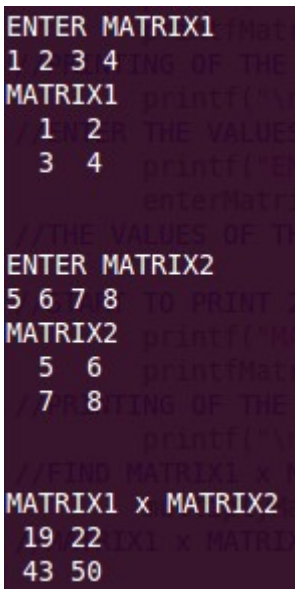
Output sample of the code:

```
Enter the radius:10
Area of the circle=314.00
```

3- Your program will find the multiplication of two 2x2 matrices. *(The following code is the updated version of the code that is under the link 2D_array.)*

```
#include <stdio.h>

void enterMatrix(int a[][2])
{
	for(int i=0;i<2;i++)
	{
		for(int j=0;j<2;j++)
		{
			scanf("%d",&a[i][j]);
		}
	}
}
void printfMatrix(int a[][2])
{
	for(int i=0;i<2;i++)
	{
		for(int j=0;j<2;j++)
		{
			printf("%3d",a[i][j]);
		}
		printf("\n");
	}
}
void multiplyMatrices(int a[][2],int b[][2],int c[][2])
{
	for(int i=0;i<2;i++)
	{
		for(int j=0;j<2;j++)
		{
			c[i][j]=0;

			for(int k=0;k<2;k++)
			{
				c[i][j]+=a[i][k]*b[k][j];

			}
		}
	}
}

int main()
{
	int matrix1[2][2];
	int matrix2[2][2];
	int matrix3[2][2];

//ENTER THE VALUES OF THE 1. MATRIX
	printf("ENTER MATRIX1\n");
	enterMatrix(matrix1);
//THE VALUES OF THE 1. MATRIX ARE ENTERED

//START TO PRINT 1.MATRIX
	printf("MATRIX1 \n");
	printfMatrix(matrix1);
//PRINTING OF THE 1. MATRIX IS FINISHED

	printf("\n\n");

//ENTER THE VALUES OF THE 2. MATRIX
	printf("ENTER MATRIX2\n");
	enterMatrix(matrix2);
//THE VALUES OF THE 2. MATRIX ARE ENTERED

//START TO PRINT 2.MATRIX
	printf("MATRIX2 \n");
	printfMatrix(matrix2);
//PRINTING OF THE 1. MATRIX IS FINISHED

	printf("\n\n");

//FIND MATRIX1 x MATRIX2
	multiplyMatrices(matrix1,matrix2,matrix3);
//MATRIX1 x MATRIX2 IS FOUND

//START TO PRINT MATRIX1 x MATRIX2
	printf("MATRIX1 x MATRIX2 \n");
	printfMatrix(matrix3);
//PRINTING OF THE MATRIX1 x MATRIX2 IS FINISHED

	return 0;
}
```

Output sample of the code:



A RECURSIVE FUNCTION EXERCISE

3- Your program will calculate the factorial of a number. Number will be entered by the user.

```
#include<stdio.h>

int factorial(int n)
{
        if(n==1)
                return 1;
        else
                return n*factorial(n-1);
}

int main()
{
        int n;

        printf("Enter a number to learn its factorial:");
        scanf("%d",&n);

        printf("%d!=%d\n",n,factorial(n));

        return 0;
}
```

Output sample of the code:

```
Enter a number to learn its factorial:5
5!=120
```