CS 115 - Introduction to Programming in Python

Lab 03

Lab Objectives: Functions

1. Complete the steps below. You should use a docstring in your function.
   a) Write a function that takes an integer, m and n, as parameters and displays an m-by-n matrix. Each element in the matrix is 0 or 1, which is generated randomly. **Hint:** You can generate a random integer number between x and y, inclusive, by using the function `random.randint(x, y)`.
   b) Using your function from part a), write a program that prompts the user to enter 2 positive integers, m and n and displays an m-by-n matrix.

   Sample run:

```
Enter a positive integer (m): 3
Enter a positive integer (n): 4
0 0 0 1
0 1 1 1
1  0 1 1
```

2. Complete the following. You should use a docstring in your functions.

   a) Write a function named `isPrime(i)` that takes a positive integer i > 1 and returns True if it i is a prime number and False otherwise. Your function may assume that i > 1. A number is a prime number if it has exactly two positive divisors: 1 and itself. However, 1 has only one positive divisor (1 itself), so it is not a prime number.

   b) Using your function from part a), write a program that inputs an integer, **a**, and displays all prime numbers less than or equal to the absolute value of **a**.

   Sample run :

```
Enter a positive integer a: 5
2 is a prime
3 is a prime
5 is a prime
```

Sample run:

```
Enter a positive integer a: -15
2 is a prime
3 is a prime
5 is a prime
7 is a prime
11 is a prime
13 is a prime
```

3. In this question, write a docstring for your function.

a) Write a function named throwUntil(x) that takes integer x ($2 \leq x \leq 12$) as parameter, and throws a pair of dice randomly until their sum is equal to x, displays the values of dice with the given sum, and returns the number of rolls it takes to roll the given sum. Your function may assume that x is an int and $2 \leq x \leq 12$.

b) Write a program that inputs a sum between 2 and 12 from the user, and determines the value of two dice adding to the sum, and the number of times it takes to roll the dice. Your program should validate that the input sum is between 2 and 12 and prompt for another input until it is in the correct range.

Sample run 1:

```
Enter sum of dice: 1
Sum must be between 2 and 12 inclusive

Enter sum of dice: 13
Sum must be between 2 and 12 inclusive

Enter sum of dice: 12
Die1 6 Die2 6
Dice are rolled 5 times to get the sum 12
```

Sample run 2:

```
Enter sum of dice: 2
Die1 1 Die2 1
Dice are rolled 64 times to get the sum 2
```