Lab Tasks

Using only the programming techniques that you have learned so far, perform the following tasks:

Task 1: Write a program that asks the user about the number of values he/she wants to enter. Than enter the values as per the required number, calculate its sum and identify the smallest value among them. The sample output is as follow:

```
Enter the number of values to be input: 5
Enter the number: 20
Enter the number: 10
Enter the number: 50
Enter the number: 4
Enter the number: 65
The sum is: 149
The smallest value of entered numbers is 4
```

Task 2: The factorial function is used frequently in probability problems. The factorial of a positive integer n (written n! and pronounced "n factorial") is equal to the product of the positive integers from 1 to n.
Write a function factorial that accepts an integer as parameter and returns its factorial.
Using the factorial function, write a program that evaluates the factorials of the integers from 1 to 5. Print the results in tabular format as following.

```
X       Factorial of X
1       1
2       2
3       6
4       24
5       120
```

Task 3: Write a program that plays an incredibly stupid number-guessing game. The user will try to guess the secret number until they get it right. That means it will keep looping as long as the guess is different from the secret number. You must store the secret number in a variable, and use that variable throughout. The secret number itself must not appear in the program at all, except in the one line where you store it into a variable. Sample output is as following:

```
I have chosen a number between 1 and 10. Try to guess it.
Your guess: 5
That is incorrect. Guess again.
Your guess: 4
That is incorrect. Guess again.
```

Task 4: The greatest common divisor (GCD) of two integers is the largest integer that evenly divides each of the two numbers. Write function gcd that returns the greatest common divisor of two integers.
Use the gcd function in your program to determine the GCD of the numbers in the sample output:

```
Enter two integers: 75 225
The greatest common divisor of 75 and 225 is 75

Enter two integers: 99 30
The greatest common divisor of 99 and 30 is 3

Enter two integers: 17 22
The greatest common divisor of 17 and 22 is 1

Enter two integers: 100 92
The greatest common divisor of 100 and 92 is 4

Enter two integers: 10005 15
The greatest common divisor of 10005 and 15 is 15
```

Task 5: An integer is said to be prime if it is divisible only by 1 and itself. For example, 2, 3, 5 and 7 are prime, but 4, 6, 8 and 9 are not.
a) Write a function that determines if a number is prime.
b) Use this function in a program that determines and prints all the prime numbers between 1 and 10,000.

```
The prime numbers from 1 to 10000 are:
    1    2    3    5    7   11   13   17   19   23
   29   31   37   41   43   47   53   59   61   67
   71   73   79   83   89   97  101  103  107  109
  113  127  131  137  139  149  151  157  163  167
   .
   .
   .
 9733 9739 9743 9749 9767 9769 9781 9787 9791 9803
 9811 9817 9829 9833 9839 9851 9857 9859 9871 9883
 9887 9901 9907 9923 9929 9931 9941 9949 9967 9973
```

Task 6: Write a code that prints on screen all the 4-digit Armstrong numbers.

Task 7: Write a program that outputs 100 lines, numbered 1 to 100, each with your name on it. The output should look like the output below:

```
1 Your name
2 Your name
3 Your name
4 Your name
...
100 Your name
```