

Lab 6 Functions

Please test the correctness of your programs on **PASS**.

Q1a. Print Number 1to19 [For Practice.]

Download and complete the program `printNum.cpp`, which intends to print integers in English, corresponding to user input (*range: 1 to 19*).

The program consists of the following functions:

`print1to9`: accepts an integer from 1 to 9 as input and print the number in English. This function has been defined for you. (*but not 100% correct !!*) Let's fix the bug(s) in function `print1to9`.

After that, you create another function called `print10to19`. The function accepts an integer from 10 to 19 as input and prints the number in English.

The user input should be prompted in the main function. After the number is read, the appropriate functions should be called for output.

Expected Outputs:

| Example-1 | Example-2 |
|--|--|
| Enter a number in Range [1--19]. <u>0</u> 0 is not in range from 1 to 19 | Enter a number in Range [1--19]. <u>20</u> 20 is not in range from 1 to 19 |
| Example-3 | Example-4 |
| Enter a number in Range [1--19]. <u>4</u> Four | Enter a number in Range [1--19]. <u>15</u> Fifteen |

Q1b. print Number 1to99 [For Practice.]

Modify the program in **Q1a** such that it accepts an integer (1 to 99) from the user and prints the English representation accordingly.

You should define an extra function as follows.

`print20to99`: accepts an integer from 20 to 99 as input and print the number in English.

Hint: You may break down the number into units digit and tens digit and call the `print1to9` and `print10to19` functions you defined in Q1a to generate the output.

Similar to **Q1a**, the user input should be done in the main function. After the number is read, the appropriate function(s) should be called for printing the result.

Expected Outputs:

| Example-1 | Example-2 |
|--|--|
| Enter a number in Range [1--99]. <u>0</u> 0 is not in range from 1 to 99 | Enter a number in Range [1--99]. <u>20</u> Twenty |
| Example-3 | Example-4 |
| Enter a number in Range [1--99]. <u>21</u> Twenty One | Enter a number in Range [1--99]. <u>-21</u> -21 is not in range from 1 to 99 |

| Example-5 | Example-6 |
|--|--|
| Enter a number in Range [1--99]. <u>78</u> Seventy Eight | Enter a number in Range [1--99]. <u>100</u> 100 is not in range from 1 to 99 |

Q2. Greatest Common Divisor [For Assessment. Will Be Marked.]

You must click [submit](#) to submit your solution. Deadline is 11:59pm, Feb 28, 2023.

Download **GCD.cpp**. The program intends to find the Greatest Common Divisor of 5 positive integers from user input. The Greatest Common Divisor is the largest positive integer that divides each of the integers, e.g. the GCD of {4, 6} is 2 and the GCD of {12, 24, 6} is 6.

Your task is as follows:

- Complete the **GCD()** function which returns the greatest common divisor of two numbers.
- Complete the loop in the main function, using **GCD()** to find the greatest common divisor of all input numbers.
- Do not modify attributes in the program.

Hint: You can use the Euclidean algorithm to get the GCD of two integers.

Expected Outputs:

| Example-1 | Example-2 |
|--|---|
| Enter 5 numbers: <u>2 4 6 8 10</u> GCD: 2 | Enter 5 numbers: <u>12 24 6 36 60</u> GCD: 6 |
| Example-3 | Example-4 |
| Enter 5 numbers: <u>12 24 8 36 100</u> GCD: 4 | Enter 5 numbers: <u>16 25 14 7 30</u> GCD: 1 |