Assignment 1: Computer Architecture

Introduction

This assignment is about assembly language programming using the MIPS simulator called SPIM. You may refer to past tutorials and additional resources such as Youtube(eg: https://www.youtube.com/watch?v=r8WcV7AiLXs).

Question 1

Write a SPIM program which for a user entered integer, determines all its one-digit-positive devisors (strictly less than 10) but not 1.

Sample I/O:

```
Enter a number:
51840
The single digit divisors are:

2

3

4

5

6

8

9
```

Save your program as **question1 .asm**

Question 2

Assume a user wants to classify numbers in terms of whether they are “divisible by 2”, “divisible 3”, “both visible by 2 and 3” and “neither divisible by 2 nor 3”. Clearly for each integer, **only one** of the classes is **most** accurate.

Write a SPIM program which allows a user to enter 5 integers and for each of them, determines which of the mentioned classes it belongs to.

Sample I/O:

```
Enter a number: 58
It is divisible by 2
Enter a number: 12
It is divisible by both 2 and 3
Enter a number: 17
It is neither divisible by 2 nor 3
Enter a number: 123
It is divisible by 3
Enter a number: 222
It is divisible by both 2 and 3
```

Save your program as **question2 .asm**

Question 3

Write a SPIM program to find weather two numbers are relatively prime.

Two integers are said to be relatively prime if there is no integer greater than one that divides them both.

Sample I/O:

```
Enter the first number:
14
Enter the second number:
15
The entered numbers are relatively prime.
```

Sample I/O:

```
Enter the first number:
12
Enter the second number:
15
The entered numbers are not relatively prime.
```

Save your program as **question3 .asm**

Submit ALL asm files in a single ZIP file to the Automatic Marker.

Mark Weighting

- Question 1: 30
- Question 2: 40
- Question 3: 30