

# Assignment3 - Due: Thursday, January 28th, 5pm

## Assignment

CSE/EEE230 Assignment3

## Due Date

Thursday, January 28th, 5pm

***Important: This is an individual assignment. Please do not collaborate.***

It must be submitted on-line (course website).

Go to "GradeScope" tab on Canvas -> CSE/EEE230 -> Assignment3, and upload your program file.

***No late assignment will be accepted***

## Minimal Submitted Files

You are required to turn in the following source file:

assignment3.s

## Objectives:

- write a MIPS assembly language program to:
  - perform arithmetic and logical operations on variables

- use **syscall** operations to display integers and strings on the console window
- use **syscall** operations to read integers from the keyboard.

## Assignment Description:

The **read\_int** system call (number 5) will cause the running program to stop and wait for the user to type in an integer at the keyboard. The integer will be put into \$v0 register and will be available after the **syscall** completes. Write a MIPS assembly language program which prompts for a user to enter four integers and calls **read\_int** four times to read in four integers. The program should perform the specified (see the C program below) addition, subtraction, multiplication, integer division, and modulo operation (compute the remainder of their division) using two of these four integers (see the C program below), then display their result on the console window. Also compute  $(\text{num4} + ((\text{num3} / 5) \bmod \text{num1})) * \text{num2}$  where num1 is the first read integer, num2 is the second read integer, num3 is the third read integer, and num4 is the forth read integer, and display the result. **Name your source code file assignment3.s.**

The following shows how it looks like in a C program:

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```
int num1, num2, num3, num4, ans1, ans2, ans3, ans4, ans5, ans6;

printf("Enter a value:\n");

//read an integer from a user input and store it in num1
scanf("%d", &num1);

printf("Enter another value:\n");

//read an integer from a user input and store it in num2
scanf("%d", &num2);

printf ("Enter one more value:\n");

//read an integer from a user input and store it in num3
scanf("%d", &num3);

printf ("Enter one more value:\n");
```

```
//read an integer from a user input and store it in num4
scanf("%d", &num4);

ans1 = num2+num4; //addition

printf("num2+num4=%d\n", ans1);

ans2 = num3-num1; //subtraction

printf("num3-num1=%d\n", ans2);

ans3 = num2*num3; //multiplication

printf("num2*num3=%d\n", ans3);

ans4 = num1/num4; //division

printf("num1/num4=%d\n", ans4);

ans5 = num2%num3; //remainder of division

printf("num2 mod num3=%d\n", ans5);

ans6 = (num4 + ((num3 / 5) % num1)) * num2;

printf("(num4 + ((num3 / 5) mod num1)) * num2=%d\n", ans6);
```

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Here is a sample output (user input is in bold):

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Enter a value:

**8**

Enter another value:

**5**

Enter one more value:

**11**

Enter one more value:

**-3**

```
num2+num4=2
num3-num1=3
num2*num3=55
num1/num4=-2
num2 mod num3=5
(num4 + ((num3 / 5) mod num1)) * num2=-5
```

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***What to turn in::***

-Submit your assignment3.s file to the file submission site through the course website by the assignment deadline. You must have your name, email address, program description, and other information in the header block as it was described in the assignment 1, and your programs should be well commented.

Go to "GradeScope" tab on Canvas -> CSE/EEE230 -> Assignment3, and upload your program file.

**Grading Criteria:**

\_\_\_\_/ 5 Documentation (header with your name, your information, and program description and comments within your code)

\_\_\_\_/ 1 Indentation and spacing (easy to read)

\_\_\_\_/ 6 Required functions and functionalities implemented

\_\_\_\_/ 8 Produces correct results?

Total points: 20

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