

2023Fall_CIS126T6CF: Computer Architecture & Organization

Final Project Description

Instructor: Dr. Kirk Mousley

Each individual student will select one MIPS programming option from the two options available and detailed below. The student will then program the option within MIPS and the MARS MIPS assembly IDE. Finally, the student will submit the .asm code file to the proper assignment found in the Week 15 course module by the due date and time specified within Canvas. The final project will be worth 200 total points.

OPTION 1: Create and code a MIPS application that calculates, stores (in an array), and prints numbers to the console determined by using the same approach as the Fibonacci sequence. The Fibonacci Sequence is the series of numbers where each number is found by adding together the 2 numbers that came before the relevant value. Your code will ask the user to input the first 2 integer values that will be the start of the sequence. In addition, your code must ask the user to input the number of values (iterations) to be calculated, stored, and shown (valid input should be between 3 and 20 values/iterations inclusively). As an example of how this sequence works here is the start of the Fibonacci sequence with relevant description:

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ...

You will notice that the number 2 is calculated by adding the two numbers before it a 1 and a 1...3 is then calculated by adding 2 + 1...5 is calculated by adding 2 + 3...etc. The output should be neat, provide output text to the user, and display the number of iterations specified by the user (neat with appropriate spacing). The code should be easy to read, well documented with comments, and follow all MIPS format and naming conventions. The code must primarily execute properly with the expected result(s). However, the code will be scrutinized and evaluated for a sense of elegance and logic. Please see the attached MIPS Application Development Rubric for specific grading criteria.

OPTION 2: Create and code a MIPS application that asks the user for 2 integers, determines the greatest common divisor (GDC), and then prints the result to the console. The GDC can be easily calculated utilizing the Euclidean Algorithm (video on how it works here: <https://www.youtube.com/watch?v=bUz2Fe9L4Xs>) The output should be neat and provide a meaningful output text to the user including the result of the GDC value for the user inputted integers. The code should be easy to read, well documented with comments, and follow all MIPS format and naming conventions. The code must primarily execute properly with the expected result(s). However, the code will be scrutinized and evaluated for a sense of elegance and logic. Please see the attached MIPS Application Development Rubric for specific grading criteria.

MIPS Application Development

[illegible]