CSE 341
Fall 2023
Project #1

Due: Sunday, October 1, 2023 at 11:59 PM

Part 1

Write a MIPS assembly language subroutine called *PrintName* that displays your username to the console in SPIM. Use the syscalls discussed in class and in Appendix A of the textbook to accomplish this. Your program should be named *project_1_part_1.s*. Submit ONLY the subroutine, using the template found on the *Projects* page of the course website. Your subroutine will be graded by making multiple subroutine calls (using *jal PrintName*) to *PrintName* to ensure that it works repeatedly.

Part 2

Write a MIPS assembly language subroutine called *GetCode* that asks the user to enter a 7 bit code consisting of ones and zeros. When the user is finished entering the data, they should hit the *Enter* key. The data should be stored in memory as a NULL terminated ASCII string at the address passed into the routine in register *a1*. The user should be prompted for the data by displaying a prompt to the console asking them to enter the data. These prompts can be stored in the beginning of the data segment, and should not reside outside of the range 0x10000000 through 0x1000FFFF in memory. Use the syscalls discussed in class and in Appendix A of the textbook to implement this subroutine. Your program should be named *project_1_part_2.s*. Submit ONLY the subroutine, using the template found on the *Projects* page of the course website. Your subroutine will be graded by making multiple subroutine calls (using *jal GetCode*) to *GetCode* to ensure that it works repeatedly.

Part 3

Write a MIPS assembly language subroutine called *GetOnes* that accepts a pointer to a NULL terminated ASCII string in register *a1*. The routine should count the number of ones (ASCII value 0x31) in the string, and return that number is register *v0*. The string should not be modified by your routine. Your program should be named *project_1_part_3.s*. Submit ONLY the subroutine, using the template found on the *Projects* page of the course website. Your subroutine will be graded by making multiple subroutine calls (using *jal GetOnes*) to *GetOnes* to ensure that it works repeatedly.

Part 4

Write a MIPS assembly language program that tests Parts 2 and 3. The program should allow the user to repeatedly enter a code (calling *GetCode*) and obtain the number of ones in the code (calling *GetOnes*). When the number of ones are obtained, that result should be displayed on the screen. The program should end when the user decides to quit. Your program should be named *project_1_part_4.s*.

Submission & Grading

Your program must be written using only native MIPS instructions, so be sure to test in SPIM using bare mode. Submit your commented assembly language code using the submit command (*submit_cse341 project_1_part_1.s, project_1_part_2.s, project_1_part_3.s, project_1_part_4.s*) on *timberlake.cse.buffalo.edu* ***before 11:59 PM on Sunday, October 1,***

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2023. **In an effort to encourage students to start the project early, the CSE 341 staff will only answer questions related to this project through the end of Thursday, September 28, 2023. Hence it is important to start early.**

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