School of Computer Science Engineering and Technology

Course- BTech	Type- Core
Course Code: CSET203	Course Name- Microprocessor & Computer Architecture
Year- 2022	Semester- 3rd
Date-	Batch-

Lab Assignment -3 (Set-2)

CO-Mapping:

Exp No.	Name	CO1	CO2	CO3
3	MIPS Programming	✓	--	✓

The MIPS assembly language simply refers to the processor's assembly language. **Microprocessor without Interlocked Pipeline Stages (MIPS)** is an acronym for Microprocessor without Interlocked Pipeline Stages. It's a MIPS Technologies-developed reduced-instruction set architecture.

To begin, you first require an excellent Integrated Development Environment to compile and execute your MIPS assembly language code. **MARS (MIPS Assembler and Runtime Simulator)** will be used in this lab for this purpose.

Objective: You will learn how MARS MIPS works and will simulate some sample assembly programs. This will help you to learn assembly programming in depth.

MARS MIPS (https://courses.missouristate.edu/KenVollmar/mars/) is lightweight IDE for programming in MIPS assembly language.

It can be obtained from https://courses.missouristate.edu/KenVollmar/mars/download.htm.

Download and double click to open it (Tutorial is available in 'Help' tab).

Q1. Using MARS simulator, write a basic assembly language code for printing your name using the .asciiz' directive. (To learn more about all the directives, go to the Help tab).

Example: let say your name is Anshul Verma, then **Anshul Verma** on output window.

Q2. Insert two Strings like "This is my first MIPS programming lab" and "This is my first line of code in MIPS language". Print both the strings in two different lines one after another.

Example: Your output should be looking like: **This is my first MIPS programming lab.**
This is my first line of code in MIPS language.

Q3. Write an assembly language code that takes your name and birth year as input. Your program first computes the age of a person and then display the output as follows.

Example: Let say the name of the person is **YYY** and Year of birth is **1999,** then the output should be like this: **YYY**
He is 23-year-old!!

Q4. Take the values of b, c, d from user for the following equations and convert following set of arithmetic operations into assembly instructions.

given code: a = b * c - d;
a = a + 10;
e = a * 5

Example: If value of b, c, d are taken as 5, 6, 7 in the program then after
1st Instruction: a = 5 * 6 – 7 = 23
2nd Instruction: a = 23 + 10 = 33
3rd Instruction: e = 33 * 5 = 165

Q5. Write the assembly language code which will check a number whether it is even or odd (input should be given by user).

Example: Enter the number to be checked for even or odd: 23
23 is odd.

Submission Instructions:

1. Submit your .asm files in your respective batches in LMS. Save all the files as per the format **RollNo_Lab#_QuestionNo.asm** (Example: E21CSE0356_Lab3_Q2.asm).
2. Write your Name and Roll No. as comment before starting of each program.
3. Make it sure that in each program, you have mentioned enough comments regarding the explanation of program instructions.
4. In the LMS please submit in your respective batch's submission portal. Submission in other batch's submission portal will not be checked.
5. Write your Name and Roll No in the .asm file itself (Use # to insert comment lines).
6. Without this you will score zero for that question.
7. Late submission will lead to penalty.
8. Any form of plagiarism/copying from peer or internet sources will lead penalty.