



COMSATS University Islamabad, Lahore Campus

Quiz 2 – FALL 2024

Course Title:	Computer Organization & Architecture			Course Code:	CPE 343	Credit Hours:	4(3,1)
Course Instructor:	Dr. Muhammad Naeem Awais			Program Name:	BS Computer Engineering		
Semester:		Batch:	FA22	Section:	B	Time:	10 minutes
Date:	15 th October, 2024			Maximum Marks:	10		
Student's Name:				Registration Number:			

Question 1: [CLO3-PLO2-C3] [10 Marks]

For the given piece of C code, *produce* the equivalent MIPS assembly code:

```
int i=10;
int a=5;
int b=4;
int result=0;
while(i != 0)
{
    result = result + sum (a,b);
    a=a-result;
    b=b+result;
    i--;
}
```

While translating the code, consider the following table for registers' usage:

Variable	i	a	b	result
Register	\$s0	\$s1	\$s2	\$t9

Solution:-

```
Addi $s0, $zero, 10
Addi $s1, $zero, 5
Addi $s2, $zero, 4
Addi $t9, $zero, 0

Loop:
    beq $s0, $zero, Exit
    Add $t0, $s1, $s2
    Add $t9, $t9, $s0
    Sub $s1, $s1, $t9
    Add $s2, $s2, $t9
    Addi $s0, $s0, -1
J Loop

Exit:
```