

# Microprocessor and Computer Architecture Laboratory

## UE20CS256

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### Week 6

<b>Program Number</b>	1
<b>Program Qn</b>	Sum of all the digits of a number
<b>ARM Assembly Code</b>	

```
.data
A: .WORD 2312
MAGIC: .WORD 0xCCCCCCCD
```

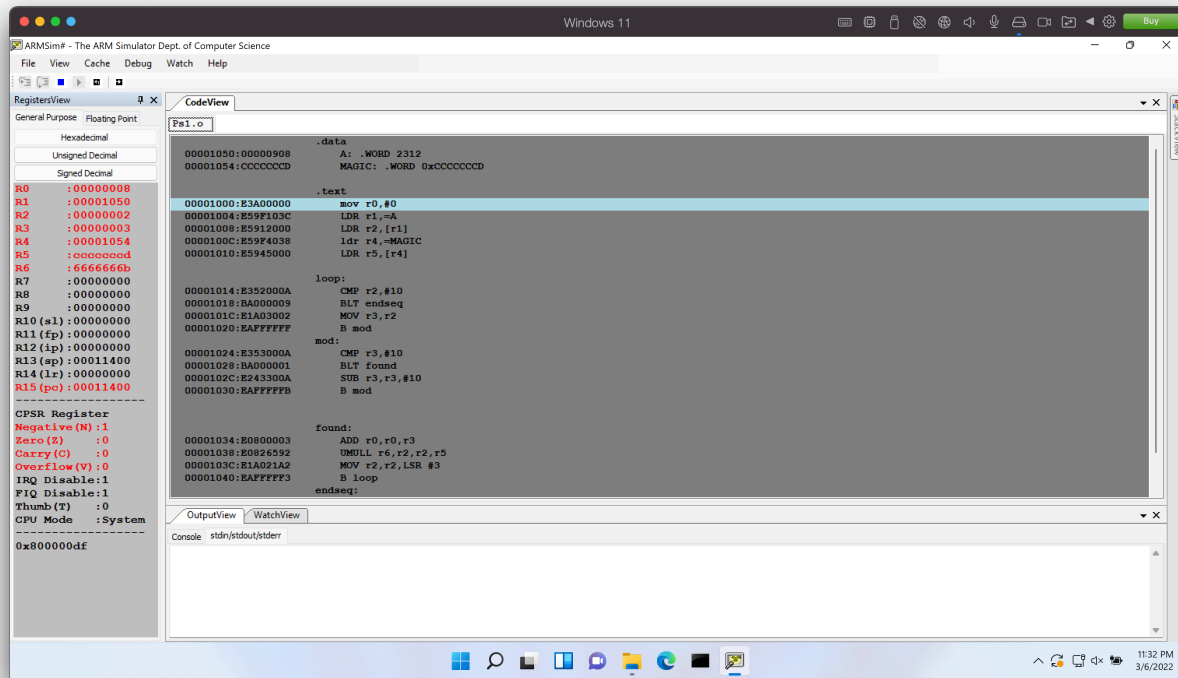
```
.text
mov r0,#0
LDR r1,=A
LDR r2,[r1]
ldr r4,=MAGIC
LDR r5,[r4]
```

```
loop:
CMP r2,#10
BLT endseq
MOV r3,r2
B mod
```

```
mod:
CMP r3,#10
BLT found
SUB r3,r3,#10
B mod
```

```
found:
ADD r0,r0,r3
UMULL r6,r2,r2,r5
MOV r2,r2,LSR #3
B loop
endseq:
ADD r0,r0,r2
.end
```

**Output Screenshot**



**Program Number** 2

**Program Qn** Number of occurrences of a character in a string

**ARM Assembly Code**

```
.data
string: .ASCIIZ "This is a string and will be used to
count the occurrences"
char: .ASCIIZ "s"
```

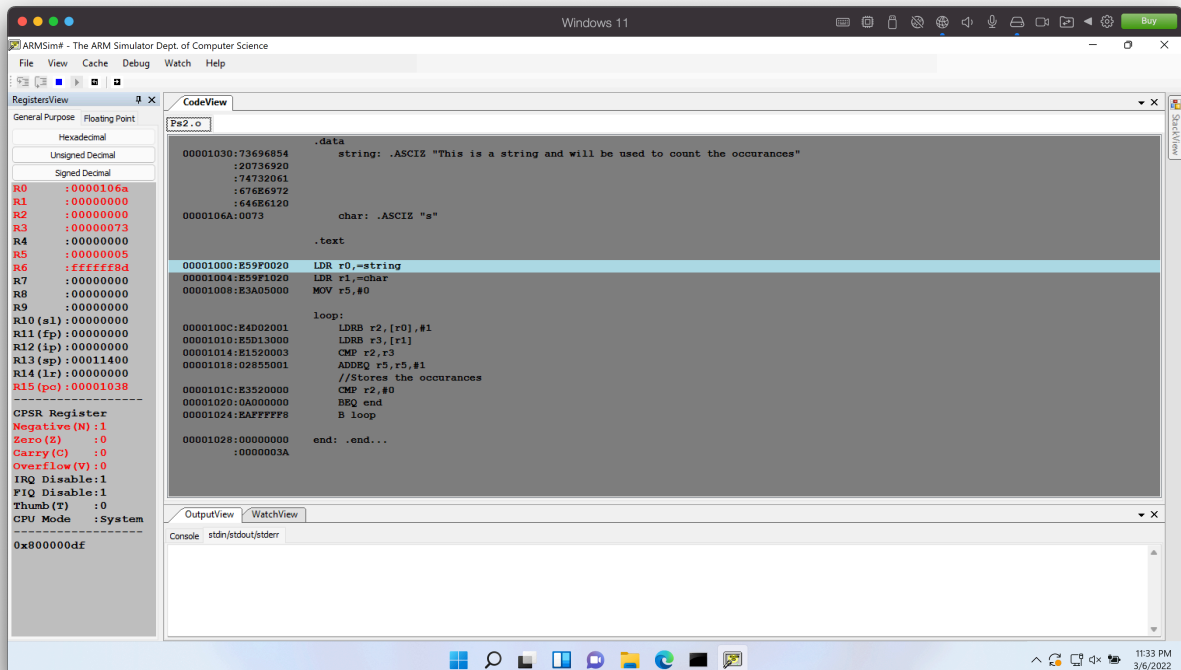
```
.text
```

```
LDR r0,string
LDR r1,char
MOV r5,#0
```

```
loop:
    LDRB r2,[r0],#1
    LDRB r3,[r1]
    CMP r2,r3
    ADDEQ r5,r5,#1
    //Stores the occurrences
    CMP r2,#0
    BEQ end
    B loop
```

```
end: .end
```

## Output Screenshot



**Disclaimer:**

- The programs and output submitted is duly written, verified and executed by me.
- I have not copied from any of my peers nor from the external resource such as internet.
- If found plagiarized, I will abide with the disciplinary action of the University.

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