

# EE 5201 - Computer Architecture

## Assembly Programming

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# Subroutines

Subroutine, also referred to as a function, procedure, method, and subprogram, is code called and executed anywhere in a program.

Syntax to define a procedure :

**proc\_name:**

**procedure body**

**...**

**ret**

The subroutine is called from another function by using the CALL instruction.

**CALL proc\_name**

# Task 1

Print Hello world! Using subroutine.

Write an Assembly program to get your name as input and then print it to the console using subroutines.

# Loops

The basic LOOP instruction syntax is :

**LOOP    label**

Label is the target label that identifies the target instruction as in the jump instructions.

The LOOP instruction assumes that the ECX register contains the loop count.

When the loop instruction is executed, the ECX register is decremented and the control jumps to the target label, until the ECX register value, i.e., the counter reaches the value zero.

## Task 2

Write an assembly program to print Hello World! 10 times on the screen

# Macros

Macro ensures modular programming in assembly language.

It is a sequence of instructions, assigned by a name and could be used anywhere in the program.

The macro begins with the **%macro** directive and ends with the **%endmacro** directive.

```
%macro macro_name number_of_params
```

```
<macro body>
```

```
%endmacro
```

## Task 3

Write an assembly program to print Hello World! 10 times on the screen using Macros

**Thank you!**