National Sun Yat-Sen University
ASSEMBLY LANGUAGE AND MICROCOMPUTER
Program Assignment #2
Due 11:59 PM Dec 8 2025

<**Programming Problem II**> Write an ARM assembly program that implements a ***deasm*** tool capable of partially deassembling the instruction contents of your program. Your program should:

1. **Identify and display** the instruction names for the following types of ARM instructions contained in a given input file (e.g., test.s):
   - 16 **data processing instructions**
   - **LDR** (load word)
   - **STR** (store word)
   - **SWI** (software interrupt)
2. For SWI:
   - In addition to displaying the instruction name, your program must also show the SWI number that is invoked.

For example, if you execute the program as follows:

deasm

Then the output displayed on the screen should resemble the following:

```
PC    instruction
0     ADD
4     SUB
8     CMP
12    --
16    --
20    SWI     #10
……
```

Here the instructions at PC=12 and 16 do not belong to those instructions that you are required to identify. Therefore, so these instructions, simply display "--" as its instruction name.

The program ***test.s*** will be included using ***.include*** directive in gcc assembly. In your assembly program, you should write something like:

```
                ……
                BL start_deasm
                .include 'test.s'
start_deasm:    …….
                ……..
```

The program ***test.s*** will be embedded, and complied together with your other part of the program. This test must be put in the same directory as you ***deasm*** program.