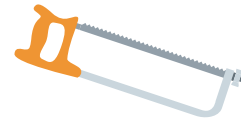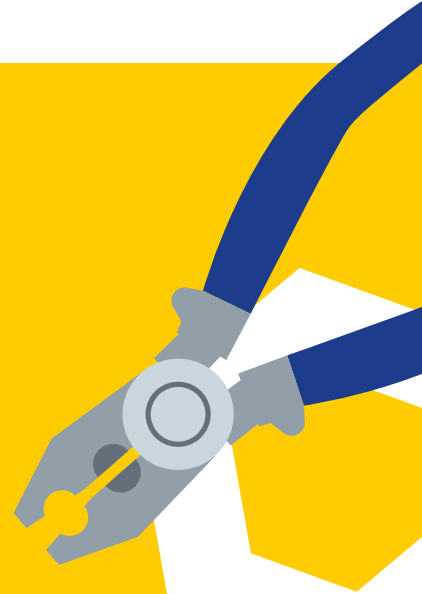# Control Flows

CSC258 LAB 2

Jan 16, 2023

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Quick Recap

Recap of the worksheet

02

TODOs

You can describe the topic of the section here

Quick
Recap

LET'S WALK THROUGH THE WORKSHEET !

If-Else Program:

- **a.k.a** branch / conditional statement
- control structure that creates conditionally executed code
- Implemented using labels and branch operations in Assembly

```
# if x < 5 {
#       y = 1
# }
# else {
#       y = 2
# }
```

```
IF:
  li t1, 5
  bge t0, t1, ELSE

THEN:
  li t2, 1
  j DONE

ELSE:
  li t2, 2

DONE:
```

If-Else Program:

💡 The **branch** uses a label to specify what the next instruction to execute should be (If the predicate is True). If the predicate is false, the next instruction is executed.

```
IF:                     # This label is not required, added for clarity
  li t1, 5
  bge t0, t1, ELSE      # If t0 >= t1 go to ELSE branch, otherwise go to THEN branch

THEN:
  li t2, 1              # load t2 with 1
  j DONE                # Jump to the DONE label

ELSE:
  li t2, 2              # load t2 with 2

DONE:                   # Marks the end of the if else
```

bge: branch greater than or equal to

Loops Program:

- Has an initialization section, loop checks for condition then evaluates the body

```
# x = 0
# while x < 5 {
#       x = x + 1
# }
```

```
LOOPINIT:              # Initialization section
  li t0, 0

WHILE:
  li t1, 5
  bge t0, t1, DONE
  addi t0, t0, 1
  j WHILE

DONE:                  # Ends the end of the loop
```