Lab 04 – Selection

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CPSC 1150

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# Q1 – Sort three integers

## Program Sort3

**File name:** lab04\Sort3.java

**Purpose:** To sort and display in ascending order three integer values entered by the user.

**Packages:** package lab04

import java.util.Scanner.

**Limitations:** Double or float values.

**Input:** Integers *a*, *b*, and *c*.

**Output:** *a*, *b*, and *c*. In ascending order.

**Pseudocode:**

Algorithm (program name)

START

1. Declare three integer variables (*a*, *b*, and *c*).
2. Input values for each variable from the user.
3. If *a* < *b* then:
   1. If *a* < *c* then:
      1. Print *a*.
      2. If *b* < *c* then:
         1. Print *b*.
         2. Print *c*.
      3. Else:
         1. Print *c*.
         2. Print *b*.
   2. Else:
      1. Print *c*.
      2. Print *a*.
      3. Print *b*.
4. Else:
   1. If *b* < *c* then:
      1. Print *b*.
      2. If *a* < *c* then:
         1. Print *a*.
         2. Print *c*.
      3. Else:
         1. Print *c*.
         2. Print *a*.
   2. Else:
      1. Print *c*.
      2. Print *b*.
      3. Print *a*.

END (program name)

A diagram of a flowchart

Description automatically generated with medium confidence

# Q2 – Use logical operator

## Program LogicalOps

**File name:** lab04\LogicalOps.java

**Purpose:** To determine whether a value entered by the user is divisible by 5 **and** 6, also if it’s divisible by 5 **or** 6, and if it’s divisible by 5 **or** 6 but **not both**.

**Packages:** package lab04

import java.util.Scanner

**Limitations:** Double or float values.

**Input:** Integer num.

**Output:** Three strings, each with Boolean values for each condition:

5 and 6 (*cond1*),

5 or 6 (*cond2*),

5 or 6 but not both (*cond3*).

**Pseudocode:**

Algorithm (program name)

START

1. Declare the variables:
   1. Int *num*,
   2. Boolean *cond1*, *cond2*, *cond3*.
2. Initialize Boolean variables to *false*.
3. Prompt user to input *num*.
4. If *num* is divisible by 5 **and** 6, then:
   1. *cond1* is *true*.
5. If *num* is divisible by 5 **or** 6, then:
   1. *cond2* is *true*.
6. If *num* is divisible by 5 **or** 6 but **not both**, then:
   1. *cond3* is *true*.
7. Display text with *cond1*.
8. Display text with *cond2*.
9. Display text with *cond3*.

END (program name)

A picture containing text, diagram, sketch, technical drawing

Description automatically generated

# Q3 – Game – Rock, Scissor, Paper

## Program RSPGame

**File name:** lab04\RSPGame.java

**Purpose:** To have the user play rock, scissor, paper with the computer.

**Packages:** package lab04

java.lang.Math

java.util.Scanner

**Limitations:** Double type input.

Float type input.

Integers not between the 0 and 2 range.

**Input:** Integer *userNum*.

**Output:** String output with the result of the game.

**Pseudocode:**

Algorithm (program name)

START

1. Declare variables *userNum* and *compNum*.
2. Assign *compNum* a random number between 0 and 2.
3. Prompt the user to enter a value between 0 and 2 and assign to *userNum*.
4. If userNum < 0 or userNum > 2 then:
   1. Error, invalid number message.
   2. If *userNum* = *compNum* then:
      1. Print **draw**.
   3. Else:
      1. If *userNum* = 0 then
         1. If *compNum* = 1 then
            1. Print **user wins**.
         2. Else:
            1. Print **user loses**.
      2. Else:
         1. If *userNum* = 1 then:
            1. If *compNum* = 2 then:

Print **user wins**.

* + - * 1. Else:

Print **user loses**.

* + - 1. Else
         1. If *compNum* = 0 then:

Print **user wins**.

* + - * 1. Else:

Print **user loses**.

END (program name)

A diagram of a flowchart

Description automatically generated with low confidence