# Homework Assignment 2: input validation, branching/conditionals

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| Assigned date | 2024-09-13 |
| Due date | 2024-09-27 |
| Estimate required time | 120 minutes |

This is an individual assignment.

* You may consult with professor and TA about any aspect of the assignment.
* You may consult with other students only in a general way, e.g., about debugging or Python issues, or questions about wording on the assignment.
* You cannot actively work with someone unless the assignment specifically grants permission to work together with another student.

Remember to follow the CMPT140/166 Coding Standard.

## Purpose

Input validation is important especially if input is from human input or a file that is manually curated as the error is unpredictable (e.g. typo). This assignment gives you a taste of how to validate user input. This assignment also gives you opportunities to practice branching/conditionals (if/else statement) design and implementation.

Recall, in HW1, your reporting system asks for results from three lab tests: POLE mutation, MMR deficiency and p53 mutation. These tests are routinely done for patients with endometrial cancer. From these results, doctors can classify patients into different groups and based on which group a patient belongs to, certain treatment may be more appropriate. The name of this grouping system is called the “ProMisE Molecular Subtype” (to learn more: <https://www.sonicgenetics.com.au/our-tests/doctor-resources/promise-classifier-of-endometrial-cancer/>) This grouping system classify patients into four groups: POLEmut, MMRd, p53abn and NSMP/p53wt. For example, if a patient is classified as POLEmut, her outcome is generally very good, and doctor may consider not recommending any chemotherapy. On the other hand, if a patient is classified as p53abn, chemotherapy is usually recommended.

In HW2, you are asked to report this ProMisE Molecular Subtype. The classification is straightforward and can be implemented using if/else statements. The following section (Specification) provides the algorithm.

## Specification

1. Modify your working version of HW1 (If your version is NOT working, please get the solution from course website) with the following modifications:
   1. Verify height and weight are integers (checking whether a string represents a floating-point number, i.e. a number with decimals, is more complicated, and so, to simplify the task, we **only need to check** whether string represents an **integer**)
   2. Verify input to lab test result questions are “yes” or “no”
   3. End the program with an error message if an invalid input is encountered
2. Determine the ProMisE subtype and include this in the patient report.

The ProMisE subtype is determined as follows:

If POLE mutation = yes (regardless of results of the other two lab tests), then ProMisE subtype = **POLEmut**

If POLE mutation = no and MMR deficiency = yes (regardless of results of the p53 mutation result), then ProMisE subtype = **MMRd**

If POLE mutation = no and MMR deficiency = no and p53 mutation = yes, then ProMisE subtype = **p53abn**

If POLE mutation = no and MMR deficiency = no and p53 mutation = no, then ProMisE subtype = **NSMP/p53wt**

1. The program shall print the report to the console (i.e. using print() statement). Please generate report in the format as shown in the following example:

A screenshot of a computer

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## Deliverables

Create one python file named hw2-LastnameFirstname.py (e.g. hw2-LeungSamuel.py) where Lastname and Firstname are student’s last and first name respectively. Please ...

Please submit your source code file hw2-LastnameFirstname.py at <http://learn.twu.ca>

Grading scheme for codes:

* Documentation (20%)
* Correct execution (60%)
* Correct style and structure (20%)

## Hints

The following Python codes check if the value of a string variable represents an integer. Please try this code yourself to understand how the checking works.

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