# Programming Lesson 9 Activities

## Activity1

Ask the user for the temperature of their tropical fish tank.

* Below 25 degrees C is too cold
* Above 27 degrees C is too hot

Display an appropriate message to the user.

## Activity 2

During the in-class presentation you were shown a program that works out an exam grade based on an inputted score. Complete the code, using the following information:

* Grade U = anything lower than 20 marks
* Grade E = below 30 and above 19
* Grade D = below 46 marks and above 30
* Grade C = less than 60 and greater than 45
* Grade B = less than 76 and above 60
* Grade A = below 90 and above 75
* Grade A\* = anything above 90
* There should also be an option for the event in which an incorrect number is entered.

This task should be completed using a selection (branching) software structure that includes the use of compound statements.

## Activity 3

Using nested-if statements, display an appropriate message as to whether the user the likes the colour blue and if they prefer reading or going to the cinema. The outcomes for the program are:

* Favourite colour is blue and prefers reading.
* Favourite colour is blue and prefers the cinema
* Favourite colour is not blue and prefers reading
* Favourite colour is not blue and prefers cinema
* There should be a fall-back message for the occasions when incorrect answers are given.

## Activity 4

Before your self driving car will start driving it must make sure all of the doors are shut and all seatbelts are fastened. It has the following sensors:

When a door is open the sensor returns False (the door is NOT closed)

Front left, front right, rear left, rear right, boot.

When a seatbelt is fastened the sensor returns a True.

Front left, front right, rear left, rear centre, rear right.

There are also seat sensors that tell you if a person is sitting in the seat. These sensors return True if someone is sitting there.

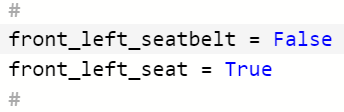
Front left, front right, rear left, rear centre, rear right.

Write some code that ensures that the car will only drive if it is safe to do so. If it is not safe and appropriate message should be shown (typically this would be displayed on the dashboard to the driver.)

**Hint:**

If a person is sitting in the drivers seat **and** that seat belt is fastened, that is fine.

You could list the sensor data at the top of your code, e.g:



**Hint 2:**

<https://repl.it/@JohnGlazebrook/Access-2019-booleans>

## Activity 5

Write a beginners guide to Python Booleans and Boolean Expressions. Answer the following questions:

What are they? Why are they used? Where are they used? What operations can be performed on them?

Use code examples to explain your points.

### Note

All code, once completed, **must be fully commented** – get in to the habit of fully commenting your code, it is important for the upcoming assignments.

## Activity 5

Draw the truth tables for:

* not
* And
* Or
* Xor