Exception Handling

### General Teacher Notes

#### Explanation of skill

When a Python program runs and an error is encountered, Python will normally generate an error message. Most of the time the program crashes as well. Exception handling lets us customise some of these error messages and can help prevent crashes.

There are lots of [built in Python exceptions](https://www.w3schools.com/python/python_ref_exceptions.asp). These exercises will focus on exceptions to handle undefined variables and input of the wrong data type.

Exception handling uses very similar syntax to selection, just with the key commands **try** and **except.**

####### Will print the contents of the ‘name’ variable

name = “Dave”

try:

print(name)

except:

print(“The variable has not been initialised”)

####### Will print ‘The variable has not been initialised’ - catches the error and displays the error message instead.

try:

print(name)

except:

print(“The variable has not been initialised”)

########## NameError will only run if there is an unassigned variable. If there’s a different error the second ‘except’ runs.

try:

print(name)

except NameError:

print(“The variable has not been assigned”)

except:

print(“Something else went wrong)

################ else runs if the try executes correctly

try:

print(name)

except NameError:

print(“The variable has not been assigned”)

except:

print(“Something else went wrong)

else:

print(“nothing went wrong”)

############## finally runs at the end of the statement regardless if there has been an error or not.

try:

print(name)

except NameError:

print(“The variable has not been assigned”)

except:

print(“Something else went wrong)

else:

print(“Nothing went wrong”)

finally:

print(“The try except has finished”)

### 1 - Basic Exception Handling

These tasks start out with just using *except*  to catch any type of error. After that we add in NameErrors.

A **NameError** means that **Python** tried to use a variable or function name, such as hello based on a previous definition. If it hasn't been defined at this point, you get the error. Usual Causes: A mistyped variable or function name.

#### Tasks

##### Predict And Run

Task and instructions - <https://repl.it/@MrAColley/261-Basic-Exceptions-Predict-Run>

Example solution - <https://repl.it/@MrAColley/261-Basic-Exceptions-Predict-Run-Solution>

##### Investigate

Task and instructions - <https://repl.it/@MrAColley/262-Basic-Exceptions-Investigate>

Example solution - <https://repl.it/@MrAColley/262-Basic-Exceptions-Investigate-Solution>

##### Modify

Task and instructions - <https://repl.it/@MrAColley/263-Basic-Exceptions-Modify>

Example solution - <https://repl.it/@MrAColley/263-Basic-Exceptions-Modify-Solution>

##### Make

Task and instructions - <https://repl.it/@MrAColley/264-Basic-Exceptions-Make>

Example solution - <https://repl.it/@MrAColley/264-Basic-Exceptions-Make-solution>

### 1 - Value Errors

#### TEACHER NOTES

Value errors let us catch input of the wrong data type. Usually useful if a user tries to type a character when you want an integer.

Make sure that students are casting to the correct data type when getting input.

################ ValueError catches any non integer input

try:

num1 = int(input(“Enter a whole number”))

except ValueError:

print(“You must enter a whole number”)

else:

print(“Thank you”)

#### Tasks

##### Predict And Run

Task and instructions - <https://repl.it/@MrAColley/265-Vale-Exceptions-Predict-Run>

Example solution - <https://repl.it/@MrAColley/265-Vale-Exceptions-Predict-Run-solution>

##### Investigate

Task and instructions - <https://repl.it/@MrAColley/266-Value-Exceptions-Investigate-Modify>

Example solution - <https://repl.it/@MrAColley/266-Value-Exceptions-Investigate-Solution>

##### Modify

Task and instructions - <https://repl.it/@MrAColley/267-Value-Errors-Modify>

Example solution - <https://repl.it/@MrAColley/267-Value-Errors-Modify-Solution>

##### Make

Task and instructions - <https://repl.it/@MrAColley/268-ValueError-Make>

Example solution - <https://repl.it/@MrAColley/268-ValueError-Make-Solution>