IS1110 Tutorial 6 – Functions

This tutorial builds on your understanding of Functions

Why do we use functions in Python?

Functions in Python. You use functions in programming to bundle a set of instructions that you want to use repeatedly or that, because of their complexity, are better self-contained in a sub-program and called when needed. That means that a function is a piece of code written to carry out a specified task.

Exercises:

1) Say Hello (parameters + calling a function)
Brief: define a function that prints a greeting, then call it.

```
# Fill in the blanks to define and call a function that prints "Hello, <name>!"
def ____(____):              # function name and one parameter
    print("Hello, " + ____ + "!")   # use the parameter
# Call the function once with your name
____("Your name here")
```

2) Double It (return vs print)

Brief: return a value from a function, then print the result outside.

```
# Write a function that RETURNS double the number given.
def double(n):      # function name and one parameter
    return n * 2        # use a return statement to return the value (e.g.,  n * 2)
result = double(n)  # call the function with a number
print(result)       # should print the doubled number
```

3) Bigger Number (if/else + return)

Brief: return the larger of two numbers.

```
# Complete the function so it returns the bigger of a and b.
def big(a, b):
    if a > b:
        return a
    else:
        return b
print(big(3, 9))    # should print larger number
```

4) Repeat a Line (one function calls another)

Brief: make one function call another function twice.

```
# Make repeat_line call print_line two times.

def print_line():

    print("Knock Knock")

def repeat_line():

print_line()   # call the first function

print_line()   # call it again

repeat_line()      # should print the line twice
```

5) Grade Converter from Week 4 *Now using Functions*

Brief: convert a numerical test score into a letter grade.

```
# Replace each ___ with the correct code.


def grade(score):                  # parameter name
    if not 0 <= score <= 100:          # use the parameter in the 0–100 range check
        return "Invalid"
    return ("A" if score >= 90 else     # compare the same parameter against grades
            "B" if score >= 80 else
            "C" if score >= 70 else
            "D" if score >= 60 else
            "F")
try:
    print("Grade:", _____(___(input("Please enter your score (0-100): "))))
    #           ^^^ convert input text to an integer using int(...)
except ValueError:
    print("Please enter a number between __ and ___.")
```

 # 6) Weather Suggestion App from Week 4 *Now using Functions*

Brief: give clothing advice based on the temperature entered by the user.

```
# Replace each ___ with the correct code.

def outfit(temp):                    # parameter name in ( ___ )
    return ("Wear a coat!" if temp < 10 else      # use the parameter for comparisons
            "Take a jumper." if temp <= 20 else
            "T-shirt weather!")

try:
    print(_____(___(input("Temperature (°C): "))))
except ValueError:
    ___print__("Please enter a valid number.")
```

 # 7) Cinema Ticket Price Calculator from Week 4 *Now using Functions*

Brief: calculate the ticket price based on age and student status.

Replace each ___ with the correct code.

```
def ticket_price(___, ___):          # two parameters: age, is_student
    if ___ < 12:  return 5           # use first parameter  here
    if ___ <= 17: return 7           # use first parameter here
    return 8 if ___ else 12          # use second parameter here


try:
    age = ___(input("Age: "))
    answer = _____("Are you a student? (yes/no): ")
    is_student = (_____== "___")                # accept exactly "yes"
    print(f"Your ticket price is €{ticket_price(___, ___)}")  # pass the two parameters
except ValueError:
    _____("Invalid input! Please enter your age as a number.")
```