MINIA UNIVERSITY
FACULTY SCIENCE
Department of Computer Science
Data Structures Using Python

Exercises #9
Dictionary and Map

9.1 ***Guessing the capitals*****:** Write a program that prompts the user to enter a capital of a country. Upon receiving the user input, the program reports whether the answer is correct. If it is correct, the program displays the message "Your answer is correct". Otherwise, the program displays the message "Your answer is wrong", and allows the user to enter another guess, for 3 times only, then displays the correct result. Assume that 10 pairs of countries and their capitals are stored in a ***dictionary***.

9.2 Repeat Ex. 9.1 using ***UnsortedTableMap*** instead of ***dictionary***.

9.3 You are the owner of a hardware store and need to keep an inventory of the different tools you sell, and how many of each are currently in stock.

Create a class called ***ToolStore***, which has:

(1) constructor that receives a file name as an argument, and declares a member: ***toolList*** (an object of class ***SortedTableMap***) that will hold the tools and their quantities in stock, then loads the names of tools and their quantities into ***toolList*** from the specified file. (Note that each line in the file contains the name and quantity of a tool separated by a comma);

(2) method ***AddTool()***, which takes a tool name and its quantity as arguments and, if it is a new tool, adds them as a pair to ***toolList***, otherwise updates the current quantity of the given tool, then displays the message "Tool addition/update completed";

(3) method ***SellTool()***, which receives a key (tool name) as an argument and, if this tool is found and its quantity > 0, reduces its quantity by 1 in ***toolList*** and displays the message "Tool successfully sold", otherwise it displays the message "Tool not available"; and

(4) method ***Display()***, which displays the list of the tools in ***toolList*** and their quantities.

Write a main program that performs the following tasks:

1. Creates an object of class ***ToolSore***, named *tools*, with the filename "**tools.dat**", which contains the tool names and their quantities.
2. In a loop, asks the user to enter a choice ('A' for add, 'S' for sell, 'D' for display, or 'X' for exit).
   - If the user enters 'A', asks him/her to enter a tool name and quantity, then calls ***AddTool()*** method.
   - If the user enters 'S', asks him/her to enter a tool name, then calls ***SellTool()*** method.
   - If the user enters 'D', calls ***DisplayTools()*** method
   - If the user enters 'X', exits the loop and stop.