# Homework 10 Programming techniques Answers

1. **Flags**

Look at the following code:

found = False  
staff = [ “Sheila”, “Dave”, “George”, “Alison”, “Claire” ]  
name = input(“Enter a name: ”)  
for i in range(len(staff)):  
 if staff[i] == name:  
 found = True  
  
if found == True:  
 print(“Yes, that person works here”)  
else:  
 print(“Sorry, that person does not work here”)

State the name of the variable acting as a flag: [1]  
  
found  
  
Describe the purpose of the program: [1]  
  
To check if a name, entered by the user, is in the list of staff  
  
Consider this alternative version of the program:

staff = [ “Sheila”, “Dave”, “George”, “Alison”, “Claire” ]  
name = input(“Enter a name: ”)  
for i in range(len(staff)):  
 if staff[i] == name:  
 print(“Yes, that person works here”)  
 else:  
 print(“Sorry, that person does not work here”)

Explain why the version that uses a flag variable is preferable. [2]  
  
It allows for the result to be printed once, at the end, rather than ‘found’ or ‘not found’ for every name in the list.

1. **Validation**

A taxi firm requires a program that will estimate journey costs. The program shouldn’t allow any journeys to be entered that are over 100 miles. Complete the missing line of code. [1]

distance = int(input(“Enter the distance: ”))  
  
while distance > 100 :  
  
 print(“Error, cannot be over 100 miles”)  
 distance = int(input(“Enter the distance: ”))

1. **Validation**

This program will not run correctly. Complete the missing line of code and explain why it is needed. [2]

guess = int(input(“Enter your guess: ”))  
while guess != 1337:  
 print(“Wrong, try again!”)  
 guess = int(input(“Enter your guess: ”))  
  
If the user doesn’t have a chance to change their guess then the program will say “Wrong…” forever – in an infinite loop

1. **Validation**

A program asks for the user to enter their shoe size. Which one will function correctly? [1]

(a)  
shoeSize = int(input(“Enter your shoe size: ”))  
while shoeSize < 1 and shoesize > 13:  
 print(“Error, invalid shoe size”)  
 shoeSize = int(input(“Enter your shoe size: ”))

(b)  
shoeSize = int(input(“Enter your shoe size: ”))  
while shoeSize < 1 or shoesize > 13:  
 print(“Error, invalid shoe size”)  
 shoeSize = int(input(“Enter your shoe size: ”))

Answer: (b)

1. **Menu**

Identify and correct the 4 errors in this program: [4]

# Function definitions not included – assume these are correct  
  
# MAIN MENU  
  
choice = “d”  
choice = “” # Must set choice to something other than ‘quit’ option  
while choice != “d”:  
  
 print(“Would you like to check if a number is:”)  
  
 print(“a. Even”)  
  
 print(“b. A multiple of three”)  
  
 print(“c. A square number”)  
  
 print(“d. Quit”)  
  
 choice = input(“Enter a choice: ”)  
  
 while choice not in (“a”,“b”,“c”,“d”):  
  
 print(“Error, invalid choice”)  
 choice = input(“Enter a choice: ”) # Otherwise stuck in loop  
 if choice == “a”:  
  
 checkIfNumberEven()  
  
 elif choice == “b”:  
  
 checkIfMultipleOfFive()  
 checkIfMultipleOfThree() # Alternatively, change menu option  
 if choice == “c”:  
 elif choice == “c”: # Using if instead of elif may cause ‘else’ to   
 run when we don’t want it to  
 checkIfSquare()  
  
 else:  
  
 print(“Goodbye!”)  
 [Total marks 12]