Assignment on data types

(Please attempt the following questions and submit inform of a pdf file to my email – tonynyamao5@gmail.com)

1.How can you check the data type of a variable in python?

2. Explain the difference between mutable and immutable data types in Python and provide examples of each.

3. How can you convert a string to an integer in Python? Are there any potential issues to be aware of during this conversion?

4. Discuss the significance of the "bool" data type in Python and its relation to conditional statements.

5. What are the differences between lists, tuples, and sets in Python? When would you choose one over the others?

6. Explain the purpose of dictionaries in Python and demonstrate how to access and modify dictionary elements.

7.create a dictionary student and have your dictionary keys as name, Adm no, grades and enter at least five rows to your dictionary.

8. Discuss the "type()" function in Python and explain its practical applications in code.

1. By using the type() function, example type("Hello") would be string

2. Mutable = Values can be edited after initialisation
   Immutable = Values cannot be edited after it is initialised

3. By casting the string to an integer (if it is a number as a string) using the int function, like int("123");

4. Bool is binary variable, either true or false, when evaluating any condition one will be basing the condition on the boolean outcome of a comparison, example if (1 == 1): print("Hello"), that would evaluate to true and therefore print "Hello"

5. List is a array of data that is mutable and created with [], tuples are immutable lists and created with (), and a set is also mutable but cannot contain any duplicates and is created with {}.

6. Dictionaries are used to create key-value pairs, allowing you to easily map keys with values, example:

```
#Create
countryCodes = {"ZA": "South Africa", "USA": "America"}

#Access
print(countryCodes["ZA"])

#ADD
countryCodes["UG"] = "Uganda"

#Modify
countryCodes["ZA"] = "Republic of South Africa"
```

7.
```
student = {
  "name": "Heini",
  "Adm no": 1234,
  "grades": "A++"
 }
for i in range(1,6):
  student["row_" + str(i)] = i
print(student)
```

8. type() tells you the data type of a variable, it can be used for validating user input for example, asking them to enter their age then checking if they indeed entered a integer before attempting to do any comparisons/operations on its value.