



4.1.1 Data Types

1) State the most appropriate data type for each of the following:

- | | |
|-----------------------|--------------------|
| a) 17 | Integer; |
| b) 3.142 | Real // Float; |
| c) True | Boolean; |
| d) "Computer Science" | String; |
| e) 'A' | Character // Char; |

[5 marks]

2) A program stores information about a student. The information is shown in Figure 1.

Figure 1

```
student = {  
    "name": "Alice",  
    "age": 17,  
    "grade": "A"  
}
```

a) What type of data structure is being used to store the student's information?

[1 mark]

- Dictionary // Record;

Figure 2 shows a list of colours stored as strings.

Figure 2

```
colours = ["red", "blue", "yellow", "orange", "green"]
```

b) Give one reason why a list is useful for storing a collection of values.

[1 mark]

- A list can store multiple values under a single identifier.;





3) A program is shown in Figure 3.

Figure 3

```
numbers = [1, 2, 3]
copy = numbers
copy.append(4)
print(numbers)
```

a) State the output produced by the program.

[1 mark]

- **[1, 2, 3, 4];**

b) Explain why the value of numbers changes even though append() was called using copy.

[2 marks]

- **numbers and copy both refer to the same list object;**
- **Therefore, when copy.append(4) changes the list, the change is also visible through numbers.**

4) A class is a user-defined data type. A class Student is being defined in Figure 4.

Figure 4

```
class Student:
    def __init__(self, name, age, grade):
        self.name = name
        self.age = age
        self.grade = grade

student = Student("Alice", 17, "A")
```

a) What is meant by a user-defined data type?

[1 mark]

- **A data type created by the programmer rather than being built into the programming language;**





- 5) Complete the table in Figure 5 which an appropriate data type to store each piece of information.

Figure 5

Information	Suitable data type
A person's age	Integer;
A temperature	Real // Float;
A person's name	String;
All the names of students in a class	List // Array;
Whether a student has passed or failed	Boolean;

[5 marks]

