



4.1.1 Relational & Boolean Operations

1) State what each of the following relational operators does:

- a) `==` Checks equivalence of two values // whether two values are equal;
- b) `<` Checks whether the first value is less than the second value;
- c) `<=` Checks whether the first value is less than or equal to the second value;
- d) `!=` Checks whether two values are not equal.;

[4 marks]

2) Explain the difference between the Boolean operations OR and XOR.

[2 marks]

- OR evaluates to True if at least one of the conditions is True;
- XOR evaluates to True only if exactly one of the conditions is True;

3) The program shown in Figure 1 checks whether a person is allowed to enter an event.

Figure 1

```
age = 18
has_ticket = True
staff = False
if age >= 18 and has_ticket:
    print("Entry allowed.")
```

a) Explain why the condition evaluates to True.

[2 marks]

- `age >= 18` evaluates to True because age is 18;
- `has_ticket` is True, so both conditions joined by *and* are True and the overall condition evaluates to True;

b) Write a condition that would allow entry if the person is either both at least 18 year old and has a ticket; or if the person is a staff member.

[1 mark]

- `(age >= 18 and has_ticket) or staff` // `age >= 18 and has_ticket or staff`

