SLIIT
Discover Your Future

BSc (Hons) in Computer Science
Year 1

Lab 03 – Logical Expressions

SE1012 – Programming Methodology **Semester 2, 2023**

Question 1

Evaluate each of the following expressions if a is 6 , b is 9 , c is 14 , and flag is 1 . Which parts of these expressions are not evaluated due to short-circuit evaluation?

a. c == a + b || !flag
b. a != 7 && flag || c >= 6
c. !(b <= 12) && a % 2 == 0
d. !(a > 5 || c < a + b)

These questions are taken from "Problem solving and Program Design in C by ……."

Question 2

Write an expression to test for each of the following relationships.

a. age is from 18 to 21 inclusive.
b. water is less than 1.5 and also greater than 0.1 .
c. year is divisible by 4 . (Hint: Use % .)
d. speed is not greater than 55 .
e. y is greater than x and less than z .
f. w is either equal to 6 or not greater than 3 .

These questions are taken from "Problem solving and Program Design in C by ……."

Question 3

You are supposed to design a complex access control system for a government facility. The system uses biometric data (fingerprint and retinal scan) and a physical access card. Create Boolean expression to determine if a person is granted access. Access is granted if at least two of the three conditions are met.

Assume the system gives whether the person's fingerprint matches the stored fingerprint, the retinal scan matches the stored retinal data, or the access card is valid.

Question 4

You are supposed to build an online test-taking platform. Create a Boolean expression to check if a student has passed a particular test. To pass, the student must have scored at least 70% on each section of the test (there are three sections), and the overall average score should be 75% or higher.

Hints:

- The test is divided into three sections, and the student's scores for each section are known.