1. What are the selection statements used in Python? Describe the operation of each.

Selection statements are also known as decision-making or branching statements.

* In Python, an if statement is used to test a condition and then decide on a set of statements based on the outcome. The if statement decides the execution of a block of statements by checking the provided condition. The statement block is performed if true and skipped if it is false.
* Furthermore, the if-else statement evaluates a condition and selects one of two statement blocks to execute according to the result. If the specified condition is true, the if-else statement determines which block of statements should be performed. If the condition is true, the true statement block is run; if the condition is false, the false statement block is executed.

The operation:

* == is equality operator, compares the value of both operands, and checks for equality.
* != is not an equal operator, it returns True if the operands on either side are not equal and returns False if they are equal.
* > greater than
* < less than
* >= one expression is greater than or equal to the other
* <= one expression is less than or equal to the other

1. What is an iterative statement? Discuss the formats and operations of the two iterative statements discussed in the unit. When would each be used?

Iterative statements, often known as loop statements, allow us to run a series of statements as long as the condition evaluates to true.

Before each execution of the loop body, the While statement evaluates a control expression; it is used to continually execute a block of statements until a condition is met.

After executing a statement, the Do statement checks the condition.

The for statement analyzes three expressions before executing the loop's body until the second control expression returns false. The for statement is handy for executing a loop body several times.

1. What is an "off by one" error? How may it be prevented?

Off-by-one errors result when the programmer incorrectly specifies the upper bound of the loop.

1. List the three logic operators and describe their behavior.