***break* statement:** A statement that terminates a loop or a switch statement.

***continue* statement:** A statement that terminates the current iteration of a loop statement.

counter-controlled loop: A looping technique in which the number of iterations is controlled by a count; in C++, the *for* statement

data validation: The process that assures that data entered into a computer are accurate.

***do-while* statement:** A loop statement in which the condition is tested at the end of each iteration.

EOF-controlled loop: A loop that reads data until an end of a file marker is detected.

event-controlled loop: A loop whose termination is predicated upon the occurrence of a specified event.

flag-controlled loop: A bool variable is defined and initialized to serve as a flag. The while loop continues until the flag variable value flips (true becomes false or false becomes true).

***for* statement:** An iterative statement that repeats one or more statements a number of times.

***goto* statement:** A statement that causes transfer of control to a specified labelled statement.

nested loop: A loop whose efficiency is a function of the efficiency of a controlling loop.

post-test loop: A loop in which the terminating condition is tested only after the execution of the loop statements. Contrast with *pre-test loop.*

postfix increment expression: In C++, the operator that adds 1 to a variable after its value has been used in an expression.

postfix decrement expression: In C++, the operator that subtracts 1 from a variable after its value has been used in an expression.

pre-test loop: A loop in which the terminating condition is tested before the execution of the loop statements. Contrast with *post-test loop.*

prefix increment expression: The expression that adds 1 to a variable before its value has been used in an expression.

prefix decrement expression: The operator that subtracts 1 from a variable before its value has been used in an expression.

***return* statement:** The statement in a function that returns an object to the calling function or defines that nothing should be returned.

sentinel: A flag that guards the end of a list or a file. The sentinel is usually the maximum value for a key field and cannot be a valid data value.

sentinel-controlled loop: A loop that processes until a sentinel in found, at which time it terminates.

***while* statement:** An iterative statement that executes its body as long as a specified condition is true.

Repetition allows the program to iterate a section of code multiple times. When we are using repetition statements, we need to use a counter to check how many times something is repeated.

Two groups of expressions are designed to simulate a counter: **postfix increment/decrement** and **prefix increment/decrement**.

There are three repetition statements: the *while loop*, the *for loop*, and the *do-while loop*.

The **while loop** contains a condition, a Boolean expression, followed by a single statement known as the body of the loop.

The **for statement** combines the three elements: loop-initialization, conditional test, and update.

The **do-while loop** is similar to the while loop except that the logical expression is tested at the end of each iteration.

There are four other statements that may be used with the loop construct: *return*, *break*, *continue*, and *goto*.

The **return statement** terminates a function. The break statement jumps to the end of a loop prematurely and discontinues repetition.

The **continue statement** in a loop is used to immediately terminate one iteration, but the next iteration will be executed.

The **goto statement** transfers control to a labeled statement. It is considered non-structured and should not be used.

RQ-1.   Discuss the difference between a pre-test and a post-test expression.

Pre-test expression checks the condition before it executes the statement. Post-test expression executes the statement first and then checks the condition (to terminate).

RQ-2.   Is the *while* statement a pre-test or a post-test expression? Explain your answer.

It is pre-test expression because it executes only if the condition is *True.*

RQ-3.   If the Boolean expression in a *while* statement has been tested 10 times, how many times has the body been executed?

Body has been executed 9 times. If the body of the *while* loop is repeated *n* times, *n + 1* tests are made.

RQ-4.   If the Boolean expression in a *do-while* statement has been tested 10 times, how many times has the body been executed?

Body has been executed 10 times. If the body of the *do-while* loop is repeated *n* times, *n* tests are made.

RQ-5.   What is the difference among a sentinel, an EOF, and a flag in an event-controlled loop?

Sentinel is a value used to terminate the iteration. The type of the sentinel is the same as the rest of the data, but its value must be different from all of the data items before it (e.g. -1).

14 23 71 87 … 66 12 −1

EOF (end of file) is a marker which terminates the iteration. It is used to detect the proper data type

// Reading from keyboard	// Reading from a file
while (cin >> num)	while (infile >> num)
{	{
process;	process;
}	}

Flag is a Boolean value (False by default) used to detect all necessary values within the iteration without stopping the loop. However another tool (*sentinel* or *EOF*) must be added to avoid infinite loops if the condition never occurs.