

Java Fundamentals

2-8: IF and WHILE Control Structures

Practice Activities

Lesson Objectives:

- Use the IF control structure to effect execution of instructions
- Use the WHILE control structure to create a conditional loop for repetitive behavior

Vocabulary:

Identify the vocabulary word for each definition below.

	A graphical representation of a process model that uses shapes to represent the actions in the model.
	Executes the first set of instructions if a condition is true and the second set of instructions if a condition is false.
	Executes instructions repeatedly in a loop while a condition is true.

Try It/Solve It:

Open the "WhiteRabbitProject" project you saved in the previous lesson. You will use this project for all of the practice activities listed below.

1. Create an IF statement process flow.
 - a. Create an IF statement process flow diagram for the following animation: IF the baby bunny collides with the hedge, the baby bunny says "Oops!" Otherwise, the baby bunny takes another hop forward.
2. Program an IF statement.
 - a. Program an IF statement so the baby bunny says "Oops!" and turns to face the White Rabbit if it collides with the hedge. If it doesn't collide with the hedge, it turns to face the White Rabbit without saying "Oops!"
 - b. Save the project.
3. Create a WHILE statement process flow.
 - a. Create a WHILE statement process flow diagram for the following scenario: While the bunny is not colliding with the White Rabbit, it hops forward repeatedly. If the bunny collides with the White Rabbit, it stops and says "Excuse me!" The White Rabbit should hop once while the bunny is speaking..
4. Program a WHILE control statement.
 - a. Use a WHILE statement to animate the bunny hopping towards the White Rabbit. If he collides with the White Rabbit, the bunny stops hopping and says "Excuse me!"
 - b. Save the project.

Optional Activities:

Complete the following optional practice activities below to continue practicing the concepts you learned in this lesson.

1. Create a new project using the wonderland template. Set up an initial scene with a Cheshire cat and a teacup. Program the following motions:
 - a. Resize the teacup so it is larger than the Cheshire cat.
 - b. Using an IF control statement, program the Cheshire cat to disappear if it collides with the teacup. If it does not collide with the teacup, it continues to move forward.
 - c. Save the project.
2. Create a new project using the wonderland template. Set up an initial scene with a queen object and a playing card object.
 - a. Using a WHILE statement, program the playing card to fall backwards and lie on the ground if the queen collides with it. If the queen does not collide with the playing card, the playing card stands still.
 - b. Save the project.
3. Create a new project using the desert template. Add a desert tortoise and several prop objects to the scene.
 - a. Program the turtle to bump into a prop object. Use the getDepth function and math calculations if necessary to program precise movements.
 - b. Program an IF statement that has the tortoise roll over onto his shell and say "Help!" while simultaneously wiggling his legs if the tortoise is facing the prop object
 - c. Save the project.