| Do these exercises using the better-ticket-machine project. | Initials |
| --- | --- |
| **Exercise 2.46** Check that the behavior we have discussed here is accurate by creating a **TicketMachine** instance and calling **insertMoney** with various actual parameter values. Check the balance both before and after calling **insertMoney**. Does the balance ever change in the cases when an error message is printed? Try to predict what will happen if you enter the value zero as the parameter, and then see if you are right. |  |
| **Exercise 2.47** Predict what you think will happen if you change the test in **insertMoney** to use the *greater-than or equal-to operator:***if(amount >= 0)**Check your predictions by running some tests. What difference does it make to the behaviorof the method? |  |
| **Exercise 2.48** Rewrite the if-else statement so that the error message is printed if the boolean expression is true but the balance is increased if the expression is false. In other words, switch the body of the “if” statement with the body of the “else” statement. You will obviously have to rewrite the condition to set things back to normal after. |  |
| **Exercise 2.49** In the *figures* project we looked at in Chapter 1 we used a **boolean** field to control a feature of the circle objects. What was that feature? Was it well suited to being controlled by a type with only two different values? |  |
| **Exercise 2.50** In this version of **printTicket**, we also do something slightly different with the **total** and **balance** fields. Compare the implementation of the method in Code 2.1 with that in Code 2.8 to see whether you can tell what those differences are. Then check your understanding by experimenting within BlueJ.

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| --- | --- |
| Code 2.1**public void printTicket()****{****// Simulate the printing of a ticket.****System.out.println("##################");****System.out.println("# The BlueJ Line");****System.out.println("# Ticket");****System.out.println("# " + price + " cents.");****System.out.println("##################");****System.out.println();****// Update the total collected with the balance.****total = total + balance;****// Clear the balance.****balance = 0;****}** | Code 2.8**public void printTicket()****{****if(balance >= price) {****// Simulate the printing of a ticket.****System.out.println("##################");****System.out.println("# The BlueJ Line");****System.out.println("# Ticket");****System.out.println("# " + price + " cents.");****System.out.println("##################");****System.out.println();****// Update the total collected with the price.****total = total + price;****// Reduce the balance by the price.****balance = balance – price;****}****else {****System.out.println("You must insert at least: " +****(price – balance) + " cents.");****}****}** |

 |  |
| **Exercise 2.51** Is it possible to remove the else part of the if statement in the **printTicket**method (i.e., remove the word **else** and the block attached to it)? Try doing this and seeingif the code still compiles. What happens now if you try to print a ticket without inserting anymoney? |  |
| **Exercise 2.52** After a ticket has been printed, could the value in the **balance** field ever beset to a negative value by subtracting **price** from it? Justify your answer. |  |
| **Exercise 2.53** So far, we have introduced you to two arithmetic operators, + and -, that canbe used in arithmetic expressions in Java. Take a look at Appendix C to find out what otheroperators are available. |  |
| **Exercise 2.54** Write an assignment statement that will store the result of multiplying twovariables, **price** and **discount**, into a third variable, **saving**. |  |
| **Exercise 2.55** Write an assignment statement that will divide the value in **total** by thevalue in **count** and store the result in **mean**. |  |
| **Exercise 2.56** Write an if statement that will compare the value in **price** against the valuein **budget**. If **price** is greater than **budget**, then print the message “Too expensive”; otherwiseprint the message “Just right”. |  |
| **Exercise 2.57** Modify your answer to the previous exercise so that the message includesthe value of your budget if the price is too high. |  |