Sunyani Technical University

Faculty of Applied Science and Technology

Department of Computer Science

ICT 314 Programming Using Java

Using Data Lab Work – 12th March, 2021

1. Write a Java class that declares variables to represent the length and width of a room in feet. Assign appropriate values to the variables—for example, length = 15 and width = 25. Compute and display the floor space of the room in square feet (area = length * width). Display explanatory text with the value—for example, "The floor space is 375 square feet". Save the class as Room.java.

2. Convert the Room class to an interactive application. Instead of assigning values to the length and width variables, accept them from the user as input. As output, echo the user's entries as well as displaying the floor space. Save the revised class as Room2.java.

3. Write a Java class that declares variables to represent the length and width of a room in feet and the price of carpeting per square foot in dollars and cents. Assign appropriate values to the variables. Compute and display, with explanatory text, the cost of carpeting the room. Save the class as Carpet.java.

4. Convert the Carpet class to an interactive application. Instead of assigning values to the length, width, and price variables, accept them from the user as input. Save the revised class as Carpet2.java.

5. Write a class that declares a variable named minutes, which holds minutes worked on a job, and assign a value. Display the value in hours and minutes; for example, 197 minutes becomes 3 hours and 17 minutes. Be sure to use a named constant where appropriate. Save the class as Time.java.

6. Write an interactive version of the Time class that accepts the minutes worked from a user. Save the class as Time2.java.

7. Write a class that declares variables to hold your three initials. Display the three initials with a period following each one, as in J.M.F. Save the class as Initials.java.

8. Write a class that prompts a student for the number of credit hours in which the student is enrolled, and the amount of money spent on books. Display, with full explanation, the student's total fees. The total is $85 per credit hour, plus the amount for books, plus a $65 athletic fee. Save the class as Fees.java.

9. Write a class that accepts a user's hourly rate of pay and the number of hours worked. Display the user's gross pay, the withholding tax (15% of gross pay), and the net pay (gross pay – withholding). Save the class as Payroll.java.

10. Write a class that calculates and displays the conversion of an entered number of dollars into currency denominations—20s, 10s, 5s, and 1s. Save the class as Dollars.java.

11. Write a program that accepts a temperature in Fahrenheit from a user and converts it to Celsius by subtracting 32 from the Fahrenheit value and multiplying the result by 5/9. Display both values. Save the class as FahrenheitToCelsius.java.

12. Travel Tickets Company sells tickets for airlines, tours, and other travel-related services. Because ticket agents frequently mistype long ticket numbers, Travel Tickets has asked you to write an application that indicates invalid ticket number entries. The class prompts a ticket agent to enter a six-digit ticket number. Ticket numbers are designed so that if you drop the last digit

of the number, then divide the number by 7, the remainder of the division will be identical to the last dropped digit. This process is illustrated in the following example:

Step 1	Enter the ticket number; for example, 123454.
Step 2	Remove the last digit, leaving 12345.
Step 3	Determine the remainder when the ticket number is divided by 7. In this case, 12345 divided by 7 leaves a remainder of 4.
Step 4	Assign the Boolean value of the comparison between the remainder and the digit dropped from the ticket number.
Step 5	Display the result—true or false—in a message box.

Accept the ticket number from the agent and verify whether it is a valid number.

Test the application with the following ticket numbers:

- 123454; the comparison should evaluate to true
- 147103; the comparison should evaluate to true
- 154123; the comparison should evaluate to false

Save the program as TicketNumber.java.