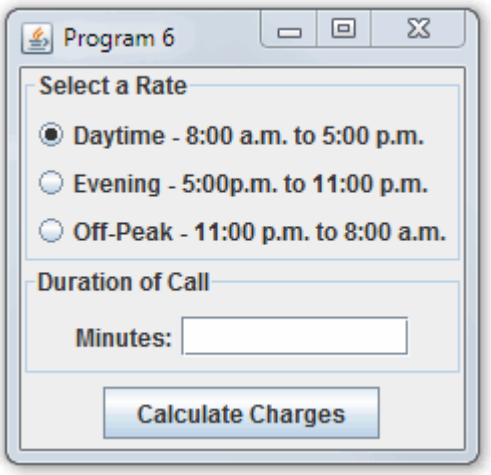
CS 111: Program 6 GUI 1



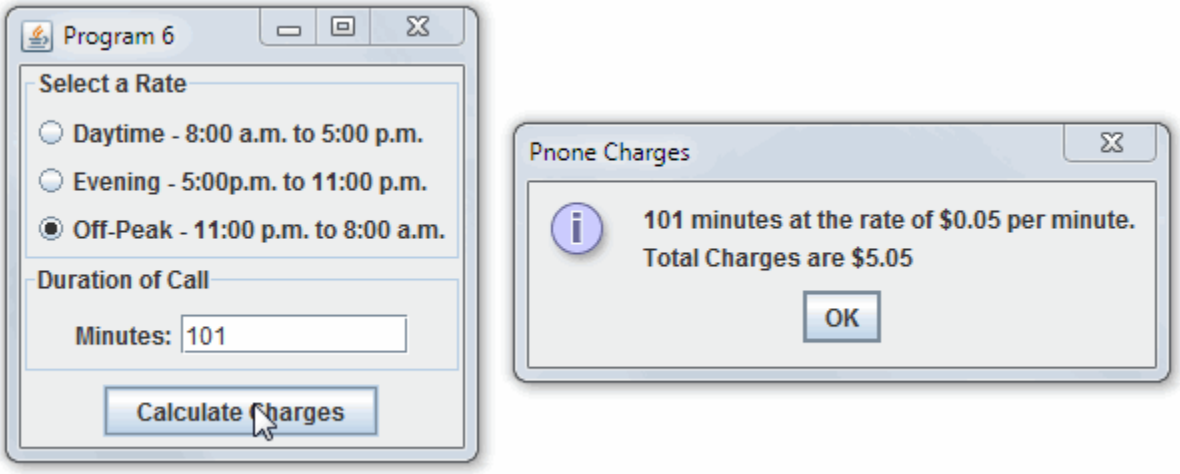
A long-distance provider charges different rates per minute for telephone calls depending on the time of day of the call.

Create a GUI application that allows the user to select a **rate** (from a set of radio buttons) and enter the number of **minutes** for a phone call. A dialog box should display the charge for the call.

- Use **Daytime** as the **default** rate (initially set to true)
- Initially the duration **minutes** should be empty

Calculate Charges

Display a JOptionPane showing the **total charges** for the call based on the rate selected and the duration of the call in minutes

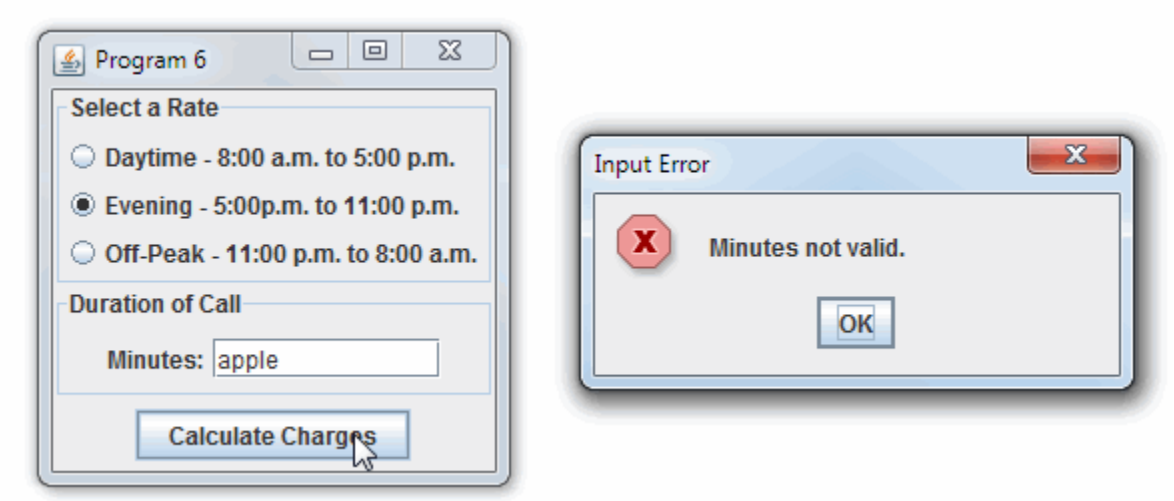


Use the following values for the various **rates**:

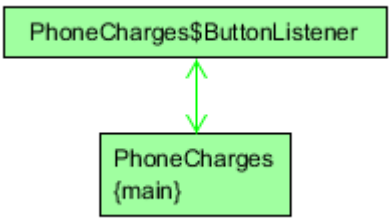
- Daytime rate: **$0.25** per minute
- Evening rate: **$0.12** per minute
- Off-Peak rate: **$0.05** per minute

Error Handling

Use a `try..catch` block to produce a **error message** if the user enters an invalid integer value for *Minutes* and clicks the calculate button.



Object Oriented Design



While there are several approaches that would work as a suitable objected-oriented design for this solution, one easy approach is to create one class, `PhoneCharges` which contains

- Three **panels** that contain the GUI components
    - **Tip**: use separate *build* methods called from the constructor method to instantiate and add the GUI components to the panels

- A `ButtonListener` **inner class** to listen for the button's ActionEvent
- a **main** method to instantiate itself

What to turn in

1. Upload your files to Blackboard. It will be graded online.
2. The assignment is due on day given in Blackboard. You program must compile and produce output for you to receive any credit.

No late CS 111 lab or programming assignments will be accepted. However, you are allowed to drop one lab and one programming assignment for the entire quarter. Students completing all labs and programming assignments will receive extra credit to offset points lost on other assignments.

Grading Criteria

30 points maximum
Program 6 Grading Sheet (2 pages, PDF) "111gradeSheet6.pdf"

- **12** points - **JFrame Graphical User Interface**
  - JFrame components match screen snapshots shown above
    - Title bar correctly displays "Program 6" (1 point possible)
    - "Select a Rate" titled border displays correctly (1 point possible)
    - Rate radio buttons display is correct (-1 per problem, 3 points possible)
    - "Duration of Call" titled border displays correctly (1 point possible)
    - "Minutes:" label displayed correctly (1 point possible)
    - Minutes text field displayed correctly (1 point possible)
    - "Calculate Charges" button is correct (1 point possible)
  - Use can select a **Rate** from a set of radio buttons
    - Default Rate is Daytime (1 point possible)
    - Rates are mutually exclusive (1 point possible)
  - User can enter the duration of call (as an **int** value)
    - User can enter **legal** integer values (1 point possible)
- **16** points - **JOptionPane User Output**
  - Clicking "Calculate Charges" button displays a JOptionPane (2 points)
  - Minutes displayed agrees with user input (1 point)
  - Applicable rate agrees with user selection (1 point)
  - Applicable rate per minute amount is displayed as currency (1 point)
  - Total charges amount displayed as currency (1 point)
  - Calculated **total charges** amount is correct (displayed as Line 2)
    - Daytime, Evening, and Off-Peak rates are used correctly in calculations (-2 per test, 6 points possible)
    - Invalid user input produces an **error message** displayed in a JOptionPane (-1 per problem, 4 points possible)
- **2** points - **Programming Style and Project Creation**
  - Program header comments are present and complete (-1 if missing header comment)

- Single-line comments are present, helpful, and sufficient
    - Skip a blank line before every single-line comment
    - Generally one single-line comment is needed for every four to six lines of code
- Naming conventions, alignment, and indentation are important. Read through the Java Style Guide for CS 111 expectations.
  http://www.cwu.edu/~gellenbe/javastyle/