

Remember for **each** program:

- The first line in each program must be a comment with your name
- User variables and assignments to store your results. **Do not** perform calculations in print statements.
- Include comments explaining your code throughout the program.
- Name your file as indicated.

Create a folder named **a3_mysfausername**, where *mysfausername* is your actual mySfa Username. All of the programs below should be saved in this folder.

Program 1: ShippingCost.java

A shipping company uses the following function to calculate the cost (in dollars) of shipping based on the weight of the package (in pounds).

$$c(w) = \begin{cases} 3.5, & \text{if } 0 < w \leq 1 \\ 5.5, & \text{if } 1 < w \leq 3 \\ 8.5, & \text{if } 3 < w \leq 10 \\ 10.5, & \text{if } 10 < w \leq 20 \end{cases}$$

An example of how to interpret this function: If the input weight is greater than 0 and less than or equal to 1, then the shipping cost is \$3.5.

Write a program that prompts the user to enter the weight of the package and display the shipping cost. If the weight is above 20, display a message “the package cannot be shipped.” If the weight is equal or less than 0, display a message “Invalid weight.”

Program 2: Nested.java

Write a program that prompts the user to enter a floating point value *cost*, as well as an integer *rating*. Use a **nested if** statement that will print the words “Book it” if an item costs less than \$150 and has at least 4 rating, otherwise prints “Save your money”. **You are required to use a nested if, do not use a compound expression with logical operators.** Make sure to test your program with all possible cases. For example, right price with good rating, right price with bad rating, bad price with good rating, and bad price with bad rating.

Program 3: SelectionMedley.java

Complete all of the following in one program, Medley.java:

- (1) Prompt for the user’s year of birth and store in a variable named *year*
- (2) Write a **boolean expression (NOT an if statement)** that will initialize a variable named *seven* to hold true when the user’s year of birth is a multiple of seven, otherwise it should hold false. (**Do not use an if statement**)
- (3) Write a statement that displays the appropriate band based on the user’s year of birth.

Band	User’s year of birth
Supremes	prior to 1967
Ramones	1967 -1983
Melvins	1984 -1999
Paramore	after 1999

- (4) Generate a random number from 0 – 15 and store it in a variable called *rand15*.

- (5) Use an **augmented assignment operator** to subtract `rand15` from the user's year of birth, and then print the new value stored in the user's year of birth.
 - (6) Use the **increment operator** to add 1 from the user's year of birth and then print the new value stored in the user's year of birth.
 - (7) In order to ride the kiddie coaster rides at Six Flags, a rider must be shorter than 50 inches and weigh less than 100 pounds. Ask the user for the rider's height and weight and then print the message "You can ride" if they meet the requirements, or "Try one of our other rides." if they do not.
-

When you have finished all the programs, verify they are all in your `a3_mysfausername` folder, then zip the folder. Upload the **zip** file to the D2L **Dropbox** under the assignment labeled **A3**. Once the zip file is uploaded, type the Academic Integrity statement below in the Submission box and submit assignment.

I am familiar with the SFA policy on Academic Integrity. The work submitted is entirely my own. I understand that it is my responsibility to verify that the file(s) submitted is the correct file(s).

Check your D2L email for the verification message that the assignment was submitted.