Exercise using the switch statement

Assignment 3 – Due in Week 7

Once you are done with your programs, upload them to eCentennial under Assessments / Assignment / Assignment 3

1. Write a program that prompts the user for a menu choice. The program will display a message based on the following table:

Choice	Message
1	"Calculate area"
2	"Calculate volume"
3	"Calculate surface area"
0	"Exit the program"
<< any other input>>	"ERROR: Invalid choice "

2. Write a program that allows the user to enter two integers and a character If the character is *A,* add the two integers If it is S, subtract the second integer from the first else multiply the integers Display the results of the arithmetic

3. Write a program that prompts the user for the number of courses and residency status (domestic or international) and calculates tuition cost. Cost is calculated based on the table below.

Domestic	$325 per course
International	$1375 per course

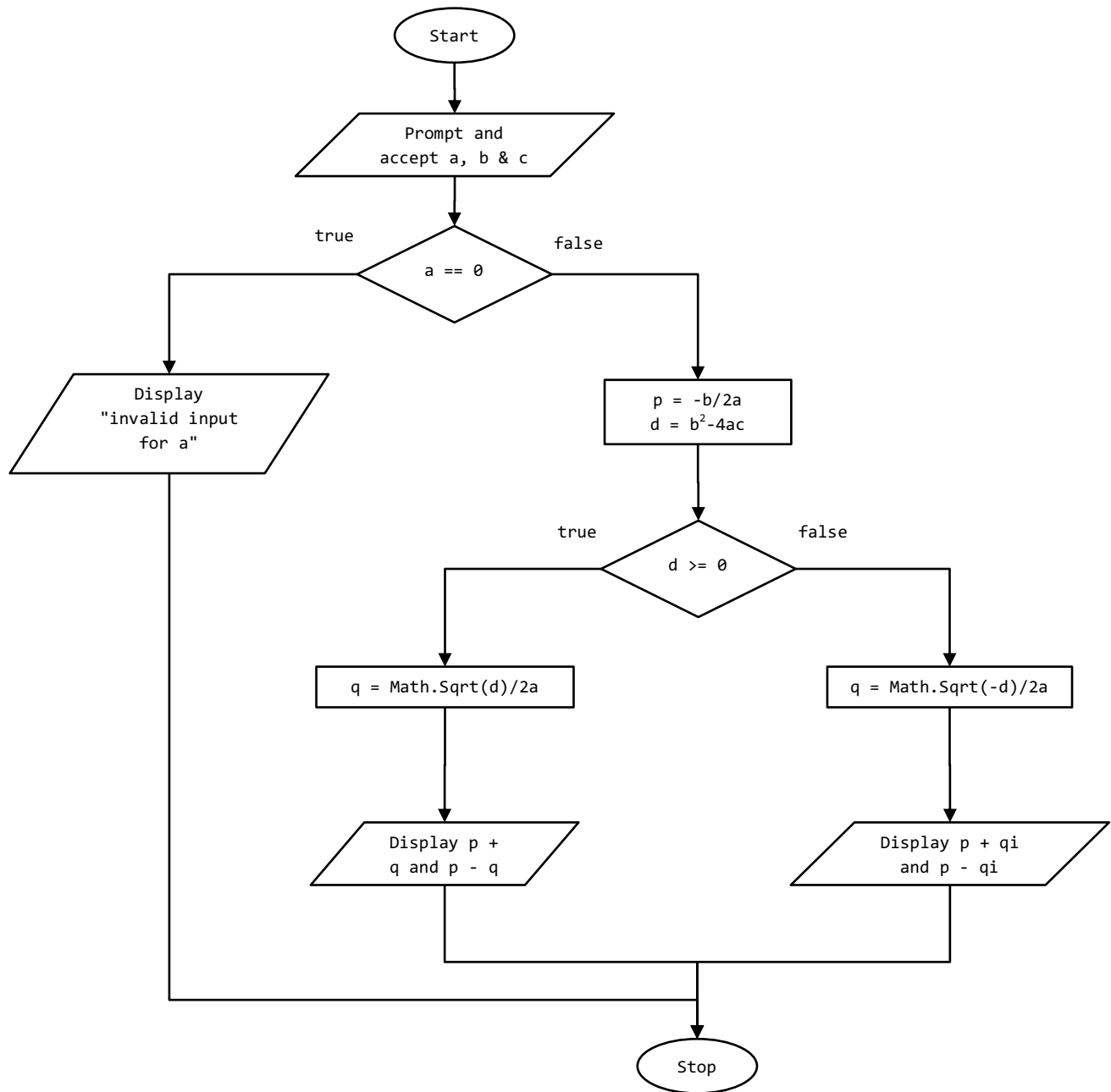You decide how you want the user to enter her/his residency status and prompt accordingly, also you should use named constants for the cost per course

4. Write a program that prompts the user for a day of the week. The program will display a message based on the following table:

Choice	Message
Sun	"Home"
Mon	"Work"
Tue	"Work"
Wed	"Home"
Thu	"Work"
Fri	"Work"
Sat	"Work"

5. Write a program for a furniture company. Ask the user to choose Pine, Oak or Mahogany. Show the price of a table manufactured with the chosen wood Pine tables cost $100, Oak tables cost $225, and Mahogany tables cost $310. You must use named constants and switch. Also you must be able to accept any variation on the case. E.g. Pine, pine PINE, pinE, Pine … should give $100.

6. Write a program to calculate the roots of a quadratic equation. The flowchart below illustrates a possible solution

```
                              ┌─────────┐
                              │  Start  │
                              └────┬────┘
                                   │
                          ╱────────▼────────╲
                         ╱   Prompt and      ╲
                         ╲ accept a, b & c    ╱
                          ╲────────┬─────────╱
                                   │
         true                     ◆                 false
      ┌─────────────────────◆  a == 0  ◆──────────────────┐
      │                       ◆                            │
      │                                                    │
      ▼                                                    ▼
 ╱─────────╲                                        ┌─────────────┐
╱  Display  ╲                                       │ p = -b/2a   │
╲ "invalid   ╱                                      │ d = b²-4ac  │
 ╲ input     ╱                                      └──────┬──────┘
  ╲ for a"  ╱                                              │
   ╲───┬───╱                      true                     ◆          false
       │                     ┌───────────────────◆ d >= 0 ◆──────────┐
       │                     │                    ◆                   │
       │                     ▼                                        ▼
       │          ┌──────────────────────┐            ┌──────────────────────────┐
       │          │ q = Math.Sqrt(d)/2a  │            │ q = Math.Sqrt(-d)/2a     │
       │          └──────────┬───────────┘            └──────────────┬───────────┘
       │                     │                                       │
       │                     ▼                                       ▼
       │          ╱──────────────────╲              ╱──────────────────────╲
       │         ╱   Display p +       ╲            ╱   Display p + qi        ╲
       │         ╲   q and p - q        ╱           ╲   and p - qi             ╱
       │          ╲───────┬────────────╱             ╲──────────┬─────────────╱
       │                  │                                     │
       │                  └──────────────────┬──────────────────┘
       │                                     │
       └─────────────────────────┐           │
                                 ▼           ▼
                              ┌─────────┐
                              │  Stop   │
                              └─────────┘
```

$p = -b/2a$

$d = b^2-4ac$

7. Write a program that prompts the user or an hourly pay rate. If the value entered is less than $5 65, display an error message

8. Write a program that prompts a user for an hourly pay rate. If the value entered is less than $5 65 or greater than $49 99, display an error message

9. Write a program that prompts a user for an hourly pay rate. If the user enters values less than $5.65 or greater than $49 99, prompt the user again. If the user enters an invalid value again, display an appropriate error message. If the user enters a valid value on either the first or second attempt, display the pay rate as well as the weekly rate which calculated as 40 times the hourly rate

10. Write a program for a college's admissions office. The user enters a numeric high school grade point average (for example, 3 2) and an admission test score. Print the message "Accept" if the student meets either of the following requirements
    A grade point average of 3.0 or higher and an admission test score of at least 60
    A grade point average of less than 3.0 and an admission test score of at least 80
    If the student does not meet either of the qualification criteria, print 'Reject'

11. Write a program that prompts the user for an hourly pay rate and hours worked. Compute gross pay (hours times pay rate), withholding tax, and net pay (gross pay minus withholding tax) Withholding tax is computed as a percentage of gross pay based on the following

Gross Pay	Withholding Percentage
Up to and including 300.00	10%
300.01 and up	12%

12.
    a. Write an application for a lawn-mowing service. The lawn-mowing season lasts 20 weeks. The weekly fee for mowing a lot under 400 square feet is $25. The fee for a lot that is 400 square feet or more, but under 600 square feet, is $35 per week. The fee for a lot that is 600 square feet or over is $50 per week. Prompt the user for the length and width of a lawn, and then print the weekly mowing fee, as well as the total fee for the 20-week season

    b. To the Lawn application you created in Exercise 8a, add a prompt that asks the user whether the customer wants to pay (1) once, (2) twice, or (3) 20 times per year. If the user enters 1 for once, the fee for the season is simply the seasonal total. If the customer requests two payments, each payment is half the seasonal fee plus a $5 service charge. If the user requests 20 separate payments, add a $3 service charge per week. Display the number of payments the customer must make, each payment amount, and the total for the season