Chapter 4 Smith Exercises & Labs

Exercise 4-1.

1. What is the exact output when this program executes?
   My Age: 17
   Able To Vote: No

2. What is the exact output if the value of **myAge** is changed to **19**?
   My Age: 19
   Able To Vote: Yes

3. What is the exact output if the value of **myAge** is changed to **18** and the expression in the **if** statement is changed to **myAge <= VOTING_AGE**?
   My Age: 18
   Able To Vote: No

4. What is the exact output if the value of **myAge** is changed to **18** and the variable named **ableToVote** is initialized with the value **"No"** rather than the value **"Yes"**?
   My Age: 18
   Able To Vote: Yes

Lab 4-1.

Lab 4-1.cpp

```cpp
#include <iostream>
#include <string>
using namespace std;
int main()
{
    int charge = 0.00;
    string charColor = "gold";
    string woodType = "oak";
    int numOfChars = 8;

    charge += (numOfChars - 5) * 4;

    if(charColor == "gold")
    {
        charge += 15;
    }
    if(woodType == "oak")
    {
        charge += 20;
    }

    charge += 35;

    cout << "The charge for this sign is $" << charge << endl;
    cout << endl << endl << "Code by Jacob Smetana" << endl;
    return(0);
}
```

```
"C:\Users\Nii-san\Desktop\prog fund 1\Chapter 4\Smith Exercises & Labs\Lab 4-1.exe"
The charge for this sign is $82


Code by Jacob Smetana

Process returned 0 (0x0)   execution time : 0.007 s
Press any key to continue.
```

Exercise 4-2.

1. What is the exact output when this program executes?
   Customer Number: 847-5551234
   Called Number: 630-5557890
   The charge for this call is $12.50

2. What is the exact output if the value of **callMinutes** is changed to **20**?
   Customer Number: 847-5551234
   Called Number: 630-5557890
   The charge for this call is $5

3. What is the exact output if the expression in the **if** statement is changed to **callMinutes >= MAX_MINS**?
   Customer Number: 847-5551234
   Called Number: 630-5557890
   The charge for this call is $12.50

4. What is the exact output if the variable named **calledAC** is assigned the value **847** rather than the value **630**?
   Customer Number: 847-5551234
   Called Number: 847-5557890
   The charge for this call is $5

Lab 4-2.

4-2.cpp

```cpp
#include <iostream>
using namespace std;
int main()
{
    int num1 = 53;
    int num2 = -50;
    int num3 = 78;
    int largest = num1;
    int smallest = num1;

    if(num2 > largest)
    {
        largest = num2;
    }
    if(num3 > largest)
    {
        largest = num3;
    }
    if(num2 < smallest)
    {
        smallest = num2;
    }
    if(num3 < smallest)
    {
        smallest = num3;
    }

    cout << "The largest value is " << largest << endl;
    cout << "The smallest value is " << smallest << endl;
    cout << endl << "Code by Jacob Smetana" << endl;
    return 0;
}
```

```
"C:\Users\Nii-san\Desktop\prog fund 1\Chapter 4\Smith Exercises & Labs\Lab 4-2.ex
The largest value is 78
The smallest value is -50

Code by Jacob Smetana

Process returned 0 (0x0)   execution time : 0.005 s
Press any key to continue.
```

Exercise 4-3.

1. What is the exact output when this program executes if the user enters **“bath”**?
   The charge for a doggy bath is $12.00

2. What is the exact output when this program executes if the user enters **“shave”**?
   We do not perform the shave service.

3. What is the exact output when this program executes if the user enters **“BATH”**?
   We do not perform the BATH service.

Lab 4-3.

4-3.cpp

```
#include <iostream>
#include <string>
using namespace std;
int main()
{
    string employeeFirstName;
    string employeeLastName;
    double numTransactions;
    double numShifts;
    double dollarValue;
    double score;
    double bonus;
    const double BONUS_1 = 50.00;
    const double BONUS_2 = 75.00;
    const double BONUS_3 = 100.00;
    const double BONUS_4 = 200.00;

    cout << "Enter employee's first name: ";
    cin >> employeeFirstName;
    cout << "Enter employee's last name: ";
    cin >> employeeLastName;
    cout << "Enter number of shifts: ";
    cin >> numShifts;
    cout << "Enter number of transactions: ";
    cin >> numTransactions;
    cout << "Enter dollar value of transactions: ";
    cin >> dollarValue;

    score = (dollarValue / numTransactions) / numShifts;

    if(score <= 30)
    {
        bonus = BONUS_1;
    }
    else if(score >= 31 && score <= 69)
    {
        bonus = BONUS_2;
    }
    else if(score >= 70 && score <= 199)
    {
        bonus = BONUS_3;
    }
    else
    {
        bonus = BONUS_4;
    }
    cout << endl << "Employee Name: " << employeeFirstName << " " << employeeLastName << endl;
    cout << "Employee Bonus: $" << bonus << endl << endl;
    cout << "Code by Jacob Smetana" << endl;
    return 0;
}
```

```
"C:\Users\Nii-san\Desktop\prog fund 1\Chapter 4\Smith Exercises & Labs\Lab 4-3
Enter employee's first name: Kim
Enter employee's last name: Smith
Enter number of shifts: 25
Enter number of transactions: 75
Enter dollar value of transactions: 40000.00

Employee Name: Kim Smith
Employee Bonus: $50

Code by Jacob Smetana

Process returned 0 (0x0)   execution time : 11.381 s
Press any key to continue.
```

Exercise 4-4.

1. What is the value of **answer** if the value of **numValue** is **10**?
   25
2. What is the value of **answer** if the value of **numValue** is **20**?
   0
3. What is the value of **answer** if the value of **numValue** is **5**?
   30
4. What is the value of **answer** if the value of **numValue** is **17**?
   0
5. Is the **break** statement in the **default** case needed? Explain.
   The break isn't needed because the closing curly brace immediately proceeds it.

Lab 4-4.

4-4.cpp

```
#include <iostream>
#include <string>
using namespace std;
int main()
{
   string employeeFirstName;
   string employeeLastName;
   double employeeSalary;
   int employeeRating;
   double employeeBonus;
   const double BONUS_1 = .25;
   const double BONUS_2 = .15;
   const double BONUS_3 = .10;
   const double NO_BONUS = 0.00;
   const int RATING_1 = 1;
   const int RATING_2 = 2;
   const int RATING_3 = 3;

   cout << "Enter employee's first name: ";
   cin >> employeeFirstName;
   cout << "Enter employee's last name: ";
   cin >> employeeLastName;
   cout << "Enter employee's yearly salary: ";
   cin >> employeeSalary;
   cout << "Enter employee's performance rating: ";
   cin >> employeeRating;

   switch(employeeRating)
   {
       case RATING_1: employeeBonus = employeeSalary * BONUS_1;
            break;
       case RATING_2: employeeBonus = employeeSalary * BONUS_2;
            break;
       case RATING_3: employeeBonus = employeeSalary * BONUS_3;
            break;
       default: employeeBonus = NO_BONUS;
   }

   cout << endl;
   cout << "Employee Name: " << employeeFirstName << " " << employeeLastName << endl;
   cout << "Employee Salary: $" << employeeSalary << endl;
   cout << "Employee Rating: " << employeeRating << endl;
   cout << "Employee Bonus: $" << employeeBonus << endl << endl;
   cout << "Code by Jacob Smetana" << endl;
   return 0;
}
```

```
"C:\Users\Nii-san\Desktop\prog fund 1\Chapter 4\Smith Exercises & Labs\Lab 4-4
Enter employee's first name: Jeanne
Enter employee's last name: Hanson
Enter employee's yearly salary: 70000
Enter employee's performance rating: 2

Employee Name: Jeanne Hanson
Employee Salary: $70000
Employee Rating: 2
Employee Bonus: $10500

Code by Jacob Smetana

Process returned 0 (0x0)   execution time : 7.229 s
Press any key to continue.
```

Exercise 4-5.

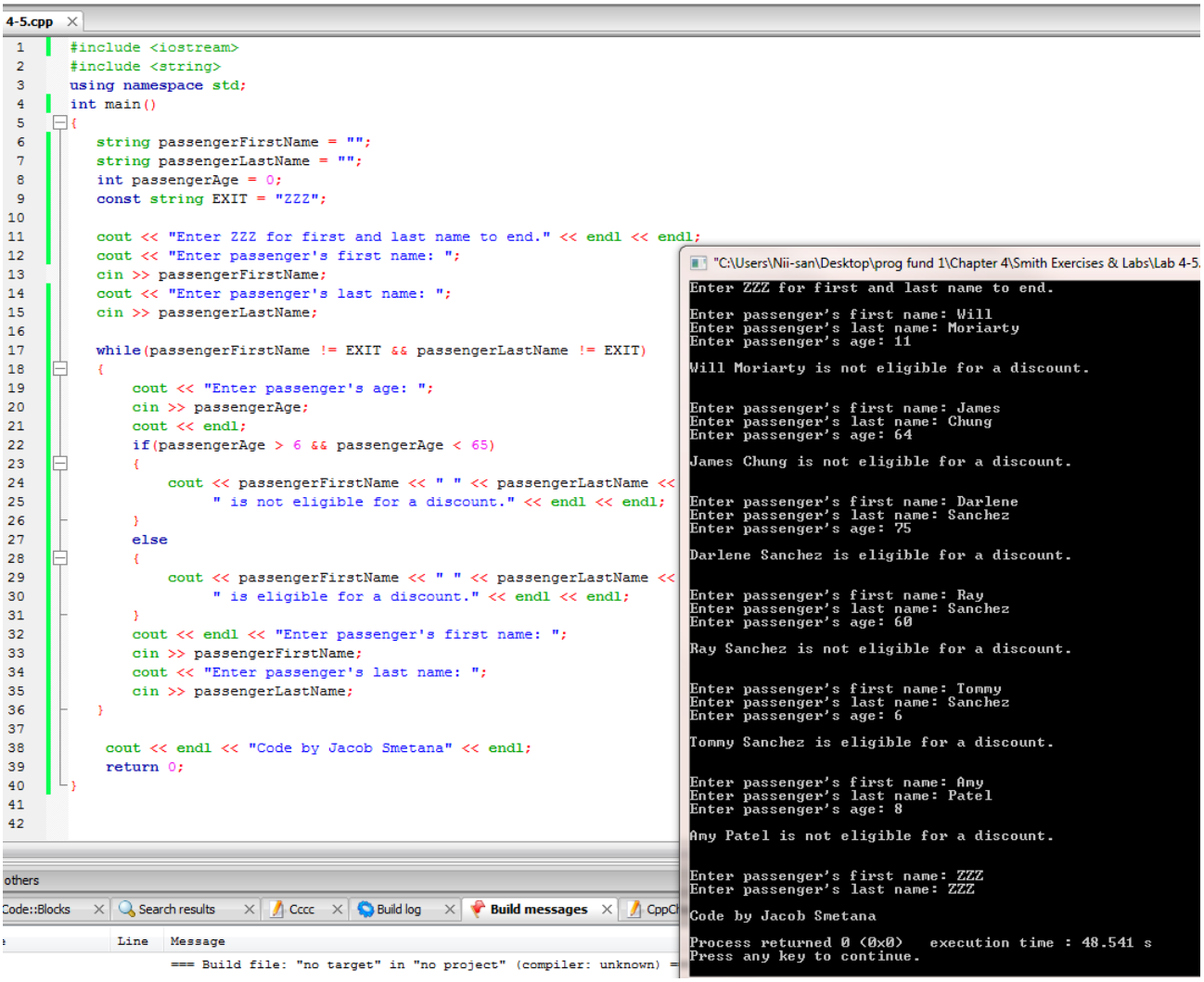
1. What is the exact output when this program executes if the customer's name is Chas Matson and the drink is **Coke**?
   Customer's First Name: Chas
   Customer's Last Name: Matson
   Drink: Coke

2. What is the exact output when this program executes if the customer's name is Chas Matson and the drink is **Pepsi**?
   Customer's First Name: Chas
   Customer's Last Name: Matson
   Drink: Pepsi

3. What is the exact output from this program when
   if(drink == "Coke" || drink == "Pepsi") is changed to
   if(drink == "Coke" && drink == "Pepsi") and the customer's name is Chas Matson and the drink is **Pepsi**?
   Chas Matson does not prefer Coke or Pepsi.

4. What is the exact output from this program when
   if(drink == "Coke" || drink == "Pepsi") is changed to
   if(drink == "Coke" || drink == "Pepsi" || drink == "coke" || drink == "pepsi") and the customer's name is Chas Matson and the drink is **coke**? What does this change allow a user to enter?
   Customer's First Name: Chas
   Customer's Last Name: Matson
   Drink: coke
   The change allows the user to enter "Coke" or "Pepsi" without the first letter being case sensitive.

Lab 4-5.



```cpp
#include <iostream>
#include <string>
using namespace std;
int main()
{
    string passengerFirstName = "";
    string passengerLastName = "";
    int passengerAge = 0;
    const string EXIT = "ZZZ";

    cout << "Enter ZZZ for first and last name to end." << endl << endl;
    cout << "Enter passenger's first name: ";
    cin >> passengerFirstName;
    cout << "Enter passenger's last name: ";
    cin >> passengerLastName;

    while(passengerFirstName != EXIT && passengerLastName != EXIT)
    {
        cout << "Enter passenger's age: ";
        cin >> passengerAge;
        cout << endl;
        if(passengerAge > 6 && passengerAge < 65)
        {
            cout << passengerFirstName << " " << passengerLastName <<
                 " is not eligible for a discount." << endl << endl;
        }
        else
        {
            cout << passengerFirstName << " " << passengerLastName <<
                 " is eligible for a discount." << endl << endl;
        }
        cout << endl << "Enter passenger's first name: ";
        cin >> passengerFirstName;
        cout << "Enter passenger's last name: ";
        cin >> passengerLastName;
    }

     cout << endl << "Code by Jacob Smetana" << endl;
     return 0;
}
```

```
"C:\Users\Nii-san\Desktop\prog fund 1\Chapter 4\Smith Exercises & Labs\Lab 4-5.

Enter ZZZ for first and last name to end.

Enter passenger's first name: Will
Enter passenger's last name: Moriarty
Enter passenger's age: 11

Will Moriarty is not eligible for a discount.


Enter passenger's first name: James
Enter passenger's last name: Chung
Enter passenger's age: 64

James Chung is not eligible for a discount.


Enter passenger's first name: Darlene
Enter passenger's last name: Sanchez
Enter passenger's age: 75

Darlene Sanchez is eligible for a discount.


Enter passenger's first name: Ray
Enter passenger's last name: Sanchez
Enter passenger's age: 60

Ray Sanchez is not eligible for a discount.


Enter passenger's first name: Tommy
Enter passenger's last name: Sanchez
Enter passenger's age: 6

Tommy Sanchez is eligible for a discount.


Enter passenger's first name: Amy
Enter passenger's last name: Patel
Enter passenger's age: 8

Amy Patel is not eligible for a discount.


Enter passenger's first name: ZZZ
Enter passenger's last name: ZZZ

Code by Jacob Smetana

Process returned 0 (0x0)   execution time : 48.541 s
Press any key to continue.
```

```
Code::Blocks | Search results | Cccc | Build log | Build messages | CppCh
Line  Message
      === Build file: "no target" in "no project" (compiler: unknown) =
```