

Bluegrass Community and Technical College  
**Programming Requirements Document**  
**Food Trucks – Solutions with if Statements**

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## VERSION 1

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- ✓ Assume the user inputs the day of the week as an integer (1-7), where 1 is Sunday, 2 is Monday, ... , 7 is Saturday. The value is stored in a variable named **dayNumber**.
- ✓ Assume string constants have been created named **SundayTruck1**, **SundayTruck2** (and the same for each day of the week). These strings hold the name of the food trucks.
- ✓ Assume a string constant named **TriviaTheme** which holds a description of the theme for trivia night (such as Star Wars).
- ✓ Assume a string constant named **KaraokeTheme** which holds a description of the theme for karaoke night (such as 70's Rock).

The selection structure below is an example of how many beginning programmers would complete this assignment. This sample uses one long if-else structure.

The code seems reasonable but contains a lot of **duplicate code** within the if clauses. We want to keep an eye on duplicate code and eliminate it whenever possible.

```
if (dayNumber == 1){
    System.out.println("\nFood trucks and events for the remainder of the week: ")
    System.out.println("\n\tSunday Night:");
    System.out.println("\t\t" + SundayTruck1);
    System.out.println("\t\t" + SundayTruck2);
    System.out.println("\n\tMonday Night:");
    System.out.println("\t\t" + MondayTruck1);
    System.out.println("\t\t" + MondayTruck2);
    System.out.println("\t\t" + TriviaTheme);
    System.out.println("\n\tTuesday Night:");
    System.out.println("\t\t" + TuesdayTruck1);
    System.out.println("\t\t" + TuesdayTruck2);
    System.out.println("\n\tWednesday Night:");
    System.out.println("\t\t" + WednesdayTruck1);
    System.out.println("\t\t" + WednesdayTruck2);
    System.out.println("\n\tThursday Night:");
    System.out.println("\t\t" + ThursdayTruck1);
    System.out.println("\t\t" + ThursdayTruck2);
    System.out.println("\n\tFriday Night:");
    System.out.println("\t\t" + FridayTruck1);
    System.out.println("\t\t" + FridayTruck2);
    System.out.println("\t\t" + KaraokeTheme);
    System.out.println("\n\tSaturday Night:");
    System.out.println("\t\t" + SaturdayTruck1);
    System.out.println("\t\t" + SaturdayTruck2);
}
```

```

else if (dayNumber == 2) {
    System.out.println("\nFood trucks and events for the remainder of the week: ");
    System.out.println("\t\t" + MondayTruck1);
    System.out.println("\t\t" + MondayTruck2);
    System.out.println("\t\t" + TriviaTheme);
    System.out.println("\n\tTuesday Night:");
    System.out.println("\t\t" + TuesdayTruck1);
    System.out.println("\t\t" + TuesdayTruck2);
    System.out.println("\n\tWednesday Night:");
    System.out.println("\t\t" + WednesdayTruck1);
    System.out.println("\t\t" + WednesdayTruck2);
    System.out.println("\n\tThursday Night:");
    System.out.println("\t\t" + ThursdayTruck1);
    System.out.println("\t\t" + ThursdayTruck2);
    System.out.println("\n\tFriday Night:");
    System.out.println("\t\t" + FridayTruck1);
    System.out.println("\t\t" + FridayTruck2);
    System.out.println("\t\t" + KaraokeTheme);
    System.out.println("\n\tSaturday Night:");
    System.out.println("\t\t" + SaturdayTruck1);
    System.out.println("\t\t" + SaturdayTruck2);    }

```

```

else if (dayNumber == 3) {
    System.out.println("\nFood trucks and events for the remainder of the week: ");
    System.out.println("\n\tTuesday Night:");
    System.out.println("\t\t" + TuesdayTruck1);
    System.out.println("\t\t" + TuesdayTruck2);
    System.out.println("\n\tWednesday Night:");
    System.out.println("\t\t" + WednesdayTruck1);
    System.out.println("\t\t" + WednesdayTruck2);
    System.out.println("\n\tThursday Night:");
    System.out.println("\t\t" + ThursdayTruck1);
    System.out.println("\t\t" + ThursdayTruck2);
    System.out.println("\n\tFriday Night:");
    System.out.println("\t\t" + FridayTruck1);
    System.out.println("\t\t" + FridayTruck2);
    System.out.println("\t\t" + KaraokeTheme);
    System.out.println("\n\tSaturday Night:");
    System.out.println("\t\t" + SaturdayTruck1);
    System.out.println("\t\t" + SaturdayTruck2);    }

```

```

else if (dayNumber == 4) {
    System.out.println("\nFood trucks and events for the remainder of the week: ");
    System.out.println("\n\tWednesday Night:");
    System.out.println("\t\t" + WednesdayTruck1);
    System.out.println("\t\t" + WednesdayTruck2);
    System.out.println("\n\tThursday Night:");
    System.out.println("\t\t" + ThursdayTruck1);
    System.out.println("\t\t" + ThursdayTruck2);
    System.out.println("\n\tFriday Night:");
    System.out.println("\t\t" + FridayTruck1);
    System.out.println("\t\t" + FridayTruck2);
    System.out.println("\t\t" + KaraokeTheme);
    System.out.println("\n\tSaturday Night:");
    System.out.println("\t\t" + SaturdayTruck1);
    System.out.println("\t\t" + SaturdayTruck2);    }

```

```

else if (dayNumber == 5) {
    System.out.println("\nFood trucks and events for the remainder of the week: ");
    System.out.println("\n\tThursday Night:");
    System.out.println("\t\t" + ThursdayTruck1);
    System.out.println("\t\t" + ThursdayTruck2);
    System.out.println("\n\tFriday Night:");
    System.out.println("\t\t" + FridayTruck1);
    System.out.println("\t\t" + FridayTruck2);
    System.out.println("\t\t" + KaraokeTheme);
    System.out.println("\n\tSaturday Night:");
    System.out.println("\t\t" + SaturdayTruck1);
    System.out.println("\t\t" + SaturdayTruck2);
}

else if (dayNumber == 6) {
    System.out.println("\nFood trucks and events for the remainder of the week: ");
    System.out.println("\n\tFriday Night:");
    System.out.println("\t\t" + FridayTruck1);
    System.out.println("\t\t" + FridayTruck2);
    System.out.println("\t\t" + KaraokeTheme);
    System.out.println("\n\tSaturday Night:");
    System.out.println("\t\t" + SaturdayTruck1);
    System.out.println("\t\t" + SaturdayTruck2);
}

else if (dayNumber == 7) {
    System.out.println("\nFood trucks and events for the remainder of the week: ");
    System.out.println("\n\tSaturday Night:");
    System.out.println("\t\t" + SaturdayTruck1);
    System.out.println("\t\t" + SaturdayTruck2);
}

else {
    System.out.println("\nYou have entered an invalid entry for a day. You should use 1-7.\n\n");
}

```

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## VERSION 2

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✓ Assume the same constant and variable names as in the previous sample solution.

**Look at the second solution below, which is also common for beginning programmers.** This time there are 8 independent if statements rather than one if-else structures. Again, the code seems reasonable, but it also contains **duplicate code** and it asks the computer to more work than is needed. **Let's see how:**

Using 8 separate if statement, the computer has to check the condition of every one of the 8 if statements. They are independent of one another. You cannot shortcut out of the logic if one of the conditions is true.

Let's suppose the user enters 1. The first condition is true (dayNumber == 1) and the code for the if structure will be executed. But now, the computer still has to check the conditions for each of the remaining if statements.

```

If (dayNumber == 1){
    System.out.println("\nFood trucks and events for the remainder of the week: ");
    System.out.println("\n\tSunday Night:");
    System.out.println("\t\t" + SundayTruck1);
    System.out.println("\t\t" + SundayTruck2);
    System.out.println("\n\tMonday Night:");
    System.out.println("\t\t" + MondayTruck1);
    System.out.println("\t\t" + MondayTruck2);
    System.out.println("\t\t" + TriviaTheme);
    System.out.println("\n\tTuesday Night:");
    System.out.println("\t\t" + TuesdayTruck1);
    System.out.println("\t\t" + TuesdayTruck2);
    System.out.println("\n\tWednesday Night:");
    System.out.println("\t\t" + WednesdayTruck1);
    System.out.println("\t\t" + WednesdayTruck2);
    System.out.println("\n\tThursday Night:");
    System.out.println("\t\t" + ThursdayTruck1);
    System.out.println("\t\t" + ThursdayTruck2);
    System.out.println("\n\tFriday Night:");
    System.out.println("\t\t" + FridayTruck1);
    System.out.println("\t\t" + FridayTruck2);
    System.out.println("\t\t" + KaraokeTheme);
    System.out.println("\n\tSaturday Night:");
    System.out.println("\t\t" + SaturdayTruck1);
    System.out.println("\t\t" + SaturdayTruck2);    }
if (dayNumber == 2) {
    System.out.println("\nFood trucks and events for the remainder of the week: ")
System.out.println("\n\tMonday Night:");
    System.out.println("\t\t" + MondayTruck1);
    System.out.println("\t\t" + MondayTruck2);
    System.out.println("\t\t" + TriviaTheme);
    System.out.println("\n\tTuesday Night:");
    System.out.println("\t\t" + TuesdayTruck1);
    System.out.println("\t\t" + TuesdayTruck2);
    System.out.println("\n\tWednesday Night:");
    System.out.println("\t\t" + WednesdayTruck1);
    System.out.println("\t\t" + WednesdayTruck2);
    System.out.println("\n\tThursday Night:");
    System.out.println("\t\t" + ThursdayTruck1);
    System.out.println("\t\t" + ThursdayTruck2);
    System.out.println("\n\tFriday Night:");
    System.out.println("\t\t" + FridayTruck1);
    System.out.println("\t\t" + FridayTruck2);
    System.out.println("\t\t" + KaraokeTheme);
    System.out.println("\n\tSaturday Night:");
    System.out.println("\t\t" + SaturdayTruck1);
    System.out.println("\t\t" + SaturdayTruck2);    }
if (dayNumber == 3) {
    System.out.println("\nFood trucks and events for the remainder of the week: ");
    System.out.println("\n\tTuesday Night:");
    System.out.println("\t\t" + TuesdayTruck1);
    System.out.println("\t\t" + TuesdayTruck2);
    System.out.println("\n\tWednesday Night:");
    System.out.println("\t\t" + WednesdayTruck1);
    System.out.println("\t\t" + WednesdayTruck2);
    System.out.println("\n\tThursday Night:");
    System.out.println("\t\t" + ThursdayTruck1);

```

```

        System.out.println("\t\t" + ThursdayTruck2);
        System.out.println("\n\tFriday Night:");
        System.out.println("\t\t" + FridayTruck1);
        System.out.println("\t\t" + FridayTruck2);
        System.out.println("\t\t" + KaraokeTheme);
        System.out.println("\n\tSaturday Night:");
        System.out.println("\t\t" + SaturdayTruck1);
        System.out.println("\t\t" + SaturdayTruck2);          }
    if (dayNumber == 4) {
        System.out.println("\nFood trucks and events for the remainder of the week: ");
        System.out.println("\n\tWednesday Night:");
        System.out.println("\t\t" + WednesdayTruck1);
        System.out.println("\t\t" + WednesdayTruck2);
        System.out.println("\n\tThursday Night:");
        System.out.println("\t\t" + ThursdayTruck1);
        System.out.println("\t\t" + ThursdayTruck2);
        System.out.println("\n\tFriday Night:");
        System.out.println("\t\t" + FridayTruck1);
        System.out.println("\t\t" + FridayTruck2);
        System.out.println("\t\t" + KaraokeTheme);
        System.out.println("\n\tSaturday Night:");
        System.out.println("\t\t" + SaturdayTruck1);
        System.out.println("\t\t" + SaturdayTruck2);          }
    if (dayNumber == 5) {
        System.out.println("\nFood trucks and events for the remainder of the week: ");
        System.out.println("\n\tThursday Night:");
        System.out.println("\t\t" + ThursdayTruck1);
        System.out.println("\t\t" + ThursdayTruck2);
        System.out.println("\n\tFriday Night:");
        System.out.println("\t\t" + FridayTruck1);
        System.out.println("\t\t" + FridayTruck2);
        System.out.println("\t\t" + KaraokeTheme);
        System.out.println("\n\tSaturday Night:");
        System.out.println("\t\t" + SaturdayTruck1);
        System.out.println("\t\t" + SaturdayTruck2);          }
    if (dayNumber == 6) {
        System.out.println("\nFood trucks and events for the remainder of the week: ");
        System.out.println("\n\tFriday Night:");
        System.out.println("\t\t" + FridayTruck1);
        System.out.println("\t\t" + FridayTruck2);
        System.out.println("\t\t" + KaraokeTheme);
        System.out.println("\n\tSaturday Night:");
        System.out.println("\t\t" + SaturdayTruck1);
        System.out.println("\t\t" + SaturdayTruck2);          }
    if (dayNumber == 7) {
        System.out.println("\nFood trucks and events for the remainder of the week: ");
        System.out.println("\n\tSaturday Night:");
        System.out.println("\t\t" + SaturdayTruck1);
        System.out.println("\t\t" + SaturdayTruck2);          }
    if (dayNumber < 1 || dayNumber > 7) {
        System.out.println("\nYou have entered an invalid entry for a day. You should use 1-7.\n\n");
    }
}

```

✓ Assume the same constant and variable names as in the previous sample solution.

**Look at the third sample below. The duplicate code has been eliminated.** This solution uses if statements which display output for just 1 day rather than output “starting” with that day. Since multi-day schedules will need to execute code from more than 1 if statement, we need the if statement to be separate (not one if-else structure).

**The code is clean. There is no duplication and the computer is not doing more work than needed.**

```
if (dayNumber >= 1 && dayNumber <= 7){
    System.out.println("\nFood trucks and events for the remainder of the week: ");

    if(dayNumber == 1){
        System.out.println("\n\tSunday Night:");
        System.out.println("\t\t" + SundayTruck1);
        System.out.println("\t\t" + SundayTruck2);
    }
    if (dayNumber <= 2) {
        System.out.println("\n\tMonday Night:");
        System.out.println("\t\t" + MondayTruck1);
        System.out.println("\t\t" + MondayTruck2);
        System.out.println("\t\t" + TriviaTheme);
    }
    if (dayNumber <= 3) {
        System.out.println("\n\tTuesday Night:");
        System.out.println("\t\t" + TuesdayTruck1);
        System.out.println("\t\t" + TuesdayTruck2);
    }
    if (dayNumber <= 4) {
        System.out.println("\n\tWednesday Night:");
        System.out.println("\t\t" + WednesdayTruck1);
        System.out.println("\t\t" + WednesdayTruck2);
    }
    if (dayNumber <= 5) {
        System.out.println("\n\tThursday Night:");
        System.out.println("\t\t" + ThursdayTruck1);
        System.out.println("\t\t" + ThursdayTruck2);
    }
    if (dayNumber <= 6) {
        System.out.println("\n\tFriday Night:");
        System.out.println("\t\t" + FridayTruck1);
        System.out.println("\t\t" + FridayTruck2);
        System.out.println("\t\t" + KaraokeTheme);
    }
    if (dayNumber <= 7) {
        System.out.println("\n\tSaturday Night:");
        System.out.println("\t\t" + SaturdayTruck1);
        System.out.println("\t\t" + SaturdayTruck2);
    }
}
else {
    System.out.println("\nYou have entered an invalid entry for a day. You should use 1-7.\n\n");
}
```

In every example, the output could be the same but you can easily see how efficiency matters when we write code.

NOTE: When you create your solution using a switch structure, you should make sure the park has a name (not “Your Park”), the food trucks have unique names (not “Food Truck 1”, “Food Truck 2”, etc.), the Trivia Theme has a reasonable theme (not “Your Trivia Theme”), and the Karaoke Theme has a reasonable theme (not “Your Karaoke Theme”).