

CS302 No If Ands Or Buts

The goal of this exercise is to practice using boolean operators as well as if and switch statements.

1.) Heads or Tails

Write a code fragment that displays “heads” or “tails” depending on the state of a coin object.

Given:

```
class Coin {
    private boolean state;
    public Coin () { ... }
    // flip() - does a randomized flip of the coin
    public void flip() { ... }
    // isHeads returns true if the current state is heads and false otherwise
    public boolean isHeads() { ... }
}
```

Complete the code fragment given:

```
Coin coin = new Coin();
coin.flip();

if ( coin.isHeads() )
    System.out.println("heads");
else
    System.out.println("tails");
```

2.) On Vacation

Given:

```
class Vacation {
    public Vacation() { ... }
    public static boolean willStudy() { ... }
    public static boolean getSleep() { ... }
}
```

```
int grade = 100;
if ( Vacation.willStudy() )
    if ( Vacation.getSleep() )
        grade = grade - 5;
    else
        grade = grade - 75;
```

Trace the code fragment shown above for each combination of vacation activities and complete the table showing the grade received.

willStudy()	true	true	false	false
getSleep()	true	false	true	false
grade	95	25	100	100

3.) Politics

Given:

```
class Gallop {
    public static final int BUCHANAN = 0; // Independent
    public static final int GORE     = 1; // Democrat
    public static final int BUSH     = 2; // Republican
    public static final int NADER    = 3; // Independent

    public int pollVoters() { ... } // returns winner's number
}
```

- (a) Write an if statement that prints “Democrat Wins”, “Republican Wins”, “Independent Wins”, or “Other Wins” based on the results of the Gallop poll.

```
int president = Gallop.pollVoters();

if ( president == Gallop.GORE ) {
    System.out.println("Democrat Wins");
}
else if ( president == Gallop.BUSH ) {
    System.out.println("Republican Wins");
}
else if ( president == Gallop.BUCHANAN || president == Gallop.NADER ) {
    System.out.println("Independent Wins");
}
else {
    System.out.println("Other Wins");
}
```

- (b) Rewrite the code fragment above using a switch statement.

```
int president = Gallop.pollVoters();

switch (president) {
    case Gallop.GORE:
        System.out.println("Democrat Wins");
        break;
    case Gallop.BUSH:
        System.out.println("Republican Wins");
        break;
    case Gallop.BUCHANAN:
    case Gallop.NADER:

```

```
        System.out.println("Independent Wins");  
        break;  
    default:  
        System.out.println("Other Wins");  
}
```

4.) Divide By Zero (or not?)

Write a single if-else statement that divides `someNumber` by `divisor` if and only if the divisor is not zero. Your expression should return true only if the result of the division is 11.

```
if ( divisor != 0 && someNumber/divisor == 11 )
    return true;
else
    return false;
```

5.) Your Input is Requested

Assume: a `MainWindow (mw)` and `InputBox (in)` already exist for your use:

```
if ( in.getInteger("Enter 1st digit") == 3 && in.getInteger("Enter 2nd digit") == 9 &&
    in.getInteger("Enter 3rd digit") == 1 && in.getInteger("Enter 4th digit") == 7 )
```

Trace the above code and record how many digits are requested and the final value of the conditional expression, if the combination you try is:

- | | | |
|----------|--------|-------------|
| (a) 7592 | _____1 | _____ false |
| (b) 3976 | _____3 | _____ false |
| (c) 3914 | _____4 | _____ false |
| (d) 4917 | _____1 | _____ false |
| (e) 3917 | _____4 | _____ true |