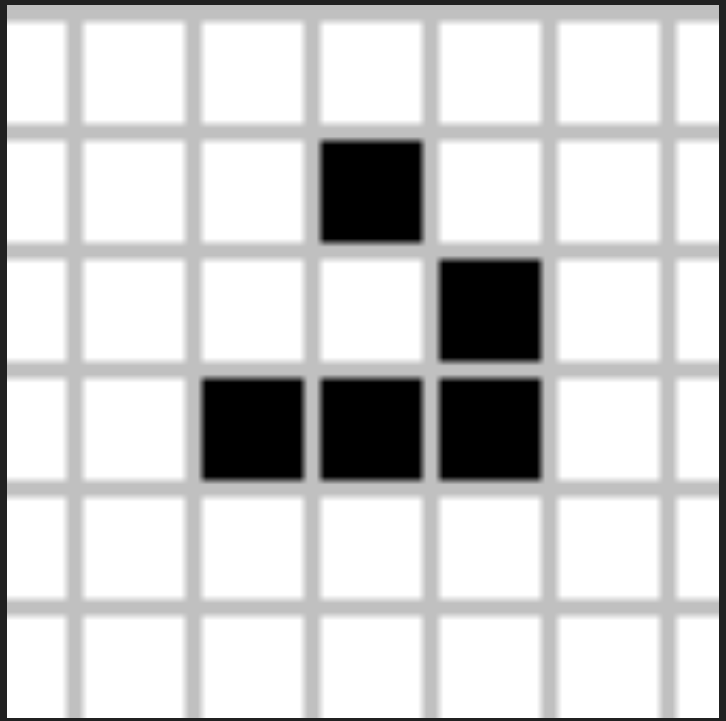
Week 5

Jim Williams

Programming Assignment (P2) : Game of Life



https://en.wikipedia.org/wiki/Conway%27s_Game_of_Life

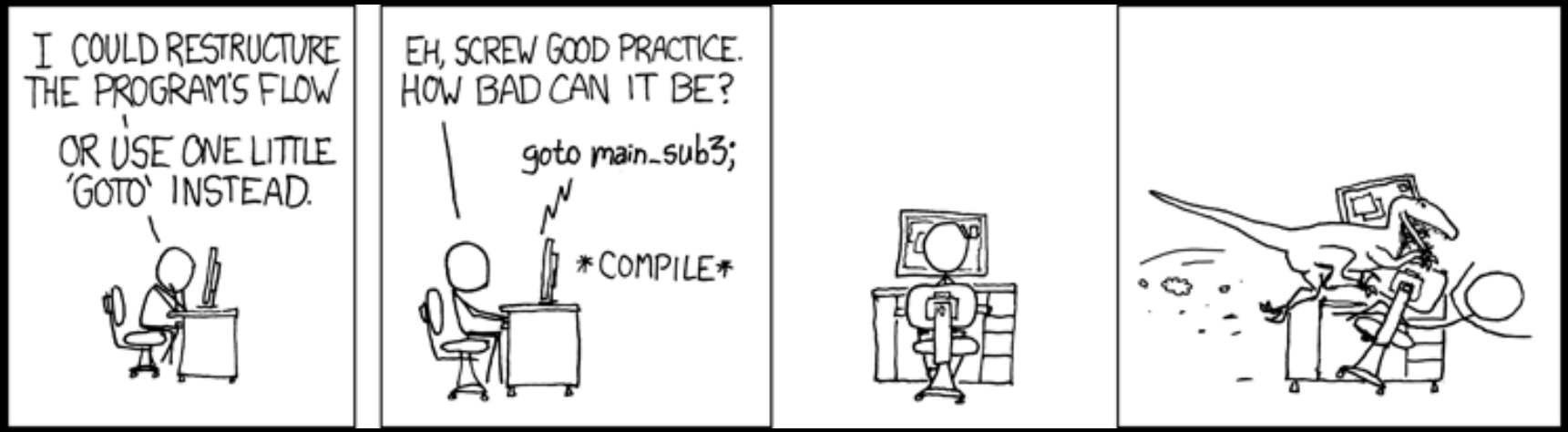
P2 Requirements

- Implement provided **static** methods
  - If you create your own **static** methods, they must be declared **private**.
- Must use **parameters** for passing values.
  - Do Not use static variables.

Structured Programming

sequence, selection, iteration

http://trace.tennessee.edu/cgi/viewcontent.cgi?article=1019&context=utk_harlan



http://stackoverflow.com/questions/2545103/is-there-a-goto-statement-in-java

Overview of Methods and OO

High level story of methods and object oriented programming.

Let us start with the temperature:

celsius = (fahrenheit - 32) * 5 / 9

Defining a Method

method header

method body

formal parameters

return type

modifiers (e.g., public, static, etc)

Calling a Method

To execute a method, you have to call or invoke it.

When calling, control is passed to the method.

On return, control is returned to the calling method.

Preparing for the Midterm

How to prepare?

- See example exam questions on Learn@UW, See topics on course website
- Read the chapters.
- Think “how would I explain this to someone?”
- Trace code, What is wrong with this?

What is wrong?

```
class AClass {
   public static void main( String [] args) {
       int num = 10;
         print( num);
   }
   public static void print(int val) {
       System.out.print( “in print() ” + val);
   }
}
```

Which method is called?

```
class AClass {
   public static void print( double value) {
            System.out.print( “in print(double) ” + value);
   }
   public static void prnt( int value) {
            System.out.print( “in print(int): “ + value);
   }
   public static void main( String [] args) {
       int value = 10;
         print( value);
   }
}
```

What is wrong?

```
class AClass {
   public print(String message, int times) {
       for ( int i = times; i > 0; i--) {
              System.out.println( message);
       }
   }
   public static void main( String [] args) {
         print( “help fix me”, 5 );
   }
}
```

What is wrong?

```
public class AClass {
   public static int findHighest(int value1, int value2) {
       if ( value1 < value2) {
              return value2;
       } else {
              return value1;
       }
    }
     public static void main( String [] args) {
       int highest = findHighest( 1, 2);
   }
}
```

What is wrong?

```
class AClass {
   public static void main( String [] args) {
        int highest;   int one = 1;   int two = 2;
        highest = max( one, two);
   }
  static int max( int value1, int value2) {
        if ( value1 > value2) {
              return value1;
        } else {
             return value2;
        }
   }
```

How can I remove 11?

int []list = {1,3,5,7,9,11,13,15,17,19};

//without leaving a blank in the middle?

How can I insert 10 into this array?

```
int []list = {1,3,5,7,9,13,15,17,19, null};
//In the proper place
```

What does this print? Improve?

```
public class AClass {
   static void print(int start, int num, char []arr) {
       for ( int i = 0; i < num &&  (start + i)   < arr.length; i++) {
              System.out.print( " " + arr[ start + i]);
       }
   }
   public static void main( String [] args) {
      char [] characters = {'a','b','c','d'};
      print( 2, 3, characters);
   }
}
```

Fix problems. What is output?

```
public class AClass {
   public static void main( String [] args) {
      char [] characters = {'a','b','c','d','e'};
      print( characters);
       System.out.println( Arrays.toString( characters));
   }
   static void print( char []arr) {
       arr[2] = ‘K’;
       arr = new char[3];
       arr[1] = ‘Z’;
   }
}
```

What is output?

```
public class AClass {
   public static void main( String [] args) {
      int num = 5;
      print( num);
      System.out.println( num);
   }
   static void print( int number) {
       number = 10;
   }
}
```