Critical Thinking chapter 6

2. Explain the difference between method declaration and method body
The method declaration defines all the method's abilities. The method
body is where all the action takes place. It contains the instructions that
program the method.

3. What type of keyword is used to change the access level of a method?
The public keyword is an access modifier

4. What is another word used for describing the access level of a
method?
Is known as visibility.

5. Explain the scope of each of the variables in the code below:

```java
public class ScopeExample {
        public static void main(String[] args) {
        int var1;
        for (int var2 = 0; var2 < 5; var2++) {
        method1();
        }
        }
        public static void method1() {
        int var3;
        for (int var4 = 0; var4 < 2; var4++) {
        var3 += 1;
        }
        }
        }
```

In the provided Java code the scope of each variable is determined by
where it is declared.

6. Write a method declaration for each of the following descriptions:

a) A class method named getVowels that can be called by any other
method, requires a String parameter, and returns an integer value.

```java
public static int getVowels(String input) {
    // method implementation goes here
}
```

b) A class method named extractDigit that can be called by any other method, requires an integer parameter, and returns an integer value.

```
public static int extractDigit(int number) {
    // method implementation goes here
}
```

c) A class method named insertString that can be called by any other method, requires a String parameter and an integer parameter, and returns a String parameter.

```
public static String insertString(String str, int index) {
    // method implementation goes here
}
```

7. a) How does the compiler distinguish one method from another?
The compiler shows one method from another primarily through method signatures.

b) Can two methods in the same class have the same name? Explain.
Yes, two methods in the same class can have the same name, as long as their names differ.

8. a) What is the return statement used for?

 The return statement is used to exit a method and send a value back to the calling code.

    b) How many values can a return statement send back to the calling statement?

A return statement can send back only one value to the calling statement.

     c) How is the declaration of a method returning a value different from the declaration of a method that does not return a value?

The key difference lies in the return type specified in the method declaration

Find and explain the error in the code below:

```java
public class MethodCallExample {
    public static void main(String[] args) {
        int num;
        doSomething();
        num = doSomething();
    }
    public static int doSomething() {
        return(5);
    }
}
```

The error in the code lies in the line where the method doSomething() is called without assigning its return value