1 Be My Main

The following code is given in Python.

```python
def assign_grade(grade):
    if grade < 60:
        print('F')
    elif grade < 70:
        print('D')
    elif grade < 80:
        print('C')
    elif grade < 90:
        print('B')
    else:
        print('A')
```

(a) Convert the above code to Java. Keep in mind differences in syntax, structure, and naming conventions.

(b) Define each word in the `main()` method

```java
public static void main(String[] args)
```
2 Two Sum

Given a list of numbers, find two numbers such that their adding them would result in the value target. Assume that only one such pair exists, and there is always a pair that fulfills the condition. Return the numbers as an array with two terms.

```java
int[] twoSum(int[] nums, int target) {
}
```

3 Skipping Fibonacci

In the standard Fibonacci sequence, we add the previous two numbers of a sequence to create the next number of the sequence. This can also be represented as adding the (n-1)th term and the (n-2)th term.

```
0, 1, 2, 3, 5, 8, 13, 21...
```

In this skipping fibonacci version, we add the (n-1)th term and the (n-3)th term to get the next number of the sequence.

```
0, 1, 1, 1, 2, 3, 4, 6, 9, 13, 19...
```

To get the 4th term, we add the 3rd and 1st term. \( f(4) = f(3) + f(1) = 1 + 1 = 2 \).
Similarly, to get the 5th term, we add the 4th and 2nd term. \( f(5) = f(4) + f(2) = 2 + 1 = 3 \). Write an algorithm that would return the nth term of the skipping fibonacci sequence.

```java
int skiponacci(int n) {
}
```
4 Let’s Get That Bread

Over the summer, you decide to take multiple jobs. Each of these jobs takes a
certain amount of time, and pays a certain rate. In your notebook, you write down
how many hours you worked and how much money you earned per hour for that
week. You want to make a class that allows you to add items to your journal and get
your total earnings whenever you want. Given a list of hours worked, and another
list of per-hour payment rates, write payCalc to return the total money earned.

You can assume that the arrays wages and hours are of equal length.

```java
public class Journal {
    private int[] wages;
    private int[] hours;

    public Journal(int[] wages, int[] hours) {
    }

    public void addEntry(int wages, int hours) {
        // Assume this is implemented
    }

    public int payCalc() {
    }
}
```
5  Add Digits Add Digits Add Digits A—

Given a number, add its digits together to get another number. Keep doing this until the result is less than 10, then return the value. For example,

\[12349 \rightarrow 1+2+3+4+9 \rightarrow 19 \rightarrow 1+9 \rightarrow 10 \rightarrow 1+0 \rightarrow 1\]

Hint: Think about how you can use both recursion and iteration to tackle this question!

```java
public int addDigits(int n) {
}
```
6 The Reptile Room

Write out what the program will output when you run the main function.

```java
public class Reptile {
    public String type;
    public String name;
    public static String location;
    public int age;

    public Reptile(String type, String name, String location, int age) {
        this.type = type;
        this.name = name;
        this.location = location;
        this.age = age;
    }

    public static void relocate(String l) {
        location = l;
    }

    public static void birthday(Reptile a) {
        a.age += 1;
    }

    public static void swap(Reptile a, Reptile b) {
        String temp = a.type;
        a.type = b.type;
        b.type = temp;
    }

    public static void flop(Reptile a, Reptile b) {
        Reptile temp = a;
        a = b;
        b = temp;
    }

    public static void main(String[] args) {
        Reptile a = new Reptile("Iguana", "Isabella", "North Carolina", 3);
        Reptile b = new Reptile("Snake", "Katya", "Colorado", 5);
        System.out.println(a.location);
        Reptile c = new Reptile("Crocodile", "Suha", "California", 1);
        System.out.println(a.location);
        System.out.println(Reptile.location);
        System.out.println(b.location);
        System.out.println(Reptile.location);
        System.out.println(c.location);
        relocate("Alaska");
    }
}
```
System.out.println(c.location);
System.out.println(d.location);
System.out.println(Reptile.location);
birthday(a);
System.out.println(a.name+" the "+a.type+" turned "+String.valueOf(a.age)+" in "+a.location+"!");
flop(c, b);
System.out.println(b.type);
swap(d, c);
System.out.println(d.type);
}