Examples

Week 9

Circle.java

```
public class Circle {

    int radius;
    String name;

    public Circle() { }

    public double getArea() {
        return 3.14*radius*radius;
    }

    public static void main(String[] args) {
        Circle pizza;
        pizza = new Circle();
        pizza.radius = 10;
        pizza.name = "Java-Pizza";
        double area = pizza.getArea();
        System.out.println("Area of " + pizza.name + ": " + area);
```

```
Area of Java-Pizza: 314.0
Area of Java-Donut: 12.56
```

Circle.java

```
        Circle donut = new Circle();
        donut.radius = 2;
        donut.name = "Java-Donut";
        area = donut.getArea();
        System.out.println("Area of " + donut.name + ": " + area);
    }
}
```

Rectangle.java

```
import java.util.Scanner;

public class Rectangle {
    int width;
    int height;

    public int getArea() {
        return width*height;
    }

    public static void main(String[] args) {
        Rectangle rect = new Rectangle();
        Scanner scanner = new Scanner(System.in);
        System.out.print(">> ");
        rect.width = scanner.nextInt();
        rect.height = scanner.nextInt();
        System.out.println("Area: " + rect.getArea());
        scanner.close();
    }
}
```

```
>> 4 5
Area: 20
```

BankAccount.java

```
import java.util.Scanner;

public class BankAccount
{
    private double balance;

    public BankAccount( double initialBalance )
    {
        if ( initialBalance > 0.0 )
            balance = initialBalance;
    }

    public void credit( double amount )
    {
        balance = balance + amount;
    }
```

BankAccount.java

```
public double getBalance()
{
    return balance;
}

public static void main( String[] args )
{
    BankAccount account1 = new BankAccount( 50.00 );
    BankAccount account2 = new BankAccount( -7.53 );

    System.out.printf( "account1 balance: $%.2f\n",
                                          account1.getBalance() );
    System.out.printf( "account2 balance: $%.2f\n\n",
                                          account2.getBalance() );
```

```
account1 balance: $50.00
account2 balance: $0.00

Enter deposit amount: 35.7
account1 balance: $85.70

Enter deposit amount: 154.8
account2 balance: $154.80
```

BankAccount.java

```
        Scanner input = new Scanner( System.in );
        double depositAmount;

        System.out.print( "Enter deposit amount: ");
        depositAmount = input.nextDouble();
        account1.credit( depositAmount );
        System.out.printf( "account1 balance: $%.2f\n\n",
                                              account1.getBalance() );

        System.out.print( "Enter deposit amount: ");
        depositAmount = input.nextDouble();
        account2.credit( depositAmount );
        System.out.printf( "account2 balance: $%.2f\n\n",
                                              account2.getBalance() );
    }
}
```

Random 클래스

- import java.util.Random 필요
- 무작위 수(난수, random number)를 만들어 줌

```
public class Random
{
    public Random( ) { ... }
    public boolean nextBoolean( ) { ... }
    public double nextDouble( ) { ... }
    public float nextFloat( ) { ... }
    public long nextLong( ) { ... }
    public int nextInt( ) { ... }
    public int nextInt( int n ) { ... }
    ...
}
```

0 ~ (n-1)의
무작위 수 반환

RandomIntegers.java

```
import java.util.Random;

public class RandomIntegers
{
    public static void main( String[] args )
    {
        Random randomNumbers = new Random();
        int face;

        for( int count=1; count <= 20; count++)
        {
            face = 1 + randomNumbers.nextInt(6);
            System.out.printf( "%d ", face );
        }
    }
}
```

```
4 3 1 4 2 2 5 4 1
5 4 2 2 1 6 1 1 3
4 6
```

Ex09_1.java

- 주사위 굴리기 모의실험
  - 주사위를 6000번 굴리는 모의실험을 하고, 각 숫자가 몇 번 발생했는지 출력하시오.
  - Random 클래스를 사용하여 무작위 수를 발생시키시오.

```
1: 978
2: 997
3: 1021
4: 991
5: 990
6: 1023
```

Ex09_2.java

- 성적분석 모의실험
  - 0~100의 점수 50개를 무작위로 만들어 배열에 저장하고 출력한다.
  - 50개의 평균을 계산하여 출력한다.
  - 점수대 별 인원 수를 세어, 가로막대그래프 형태로 출력한다.
  - 개수를 300개로 늘려서 다시 실험한다.

```
score[]: 38 85 31 8 18 13 53 33
25 2 73 32 53 14 77 74 69 34 79
27 31 67 81 62 81 29 92 22 65 20
50 36 70 50 79 23 45 17 84 26 68
54 2 78 64 5 83 41 75 28
Average: 47.32
  100:  0
99-90:  1 *
89-80:  5 *****
79-70:  8 ********
69-60:  6 ******
59-50:  5 *****
49-40:  2 **
39-30:  7 *******
29-20:  8 ********
19-10:  4 ****
09-00:  4 ****
```