Test case design - study point exercise

Equivalence Partitioning

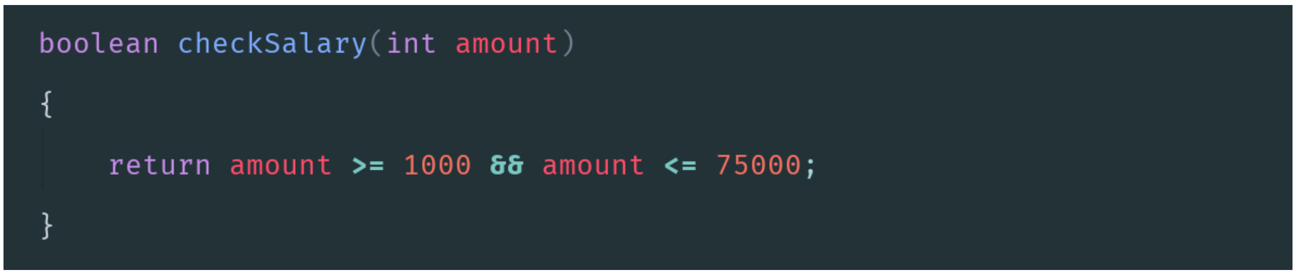
1. Make equivalences classes for the input variable for this method that accepts the numbers 1 - 1000:

```java
boolean isEven(int n)
{
    return n > 0 && n <= 1000 && n % 2 == 0;
}
```

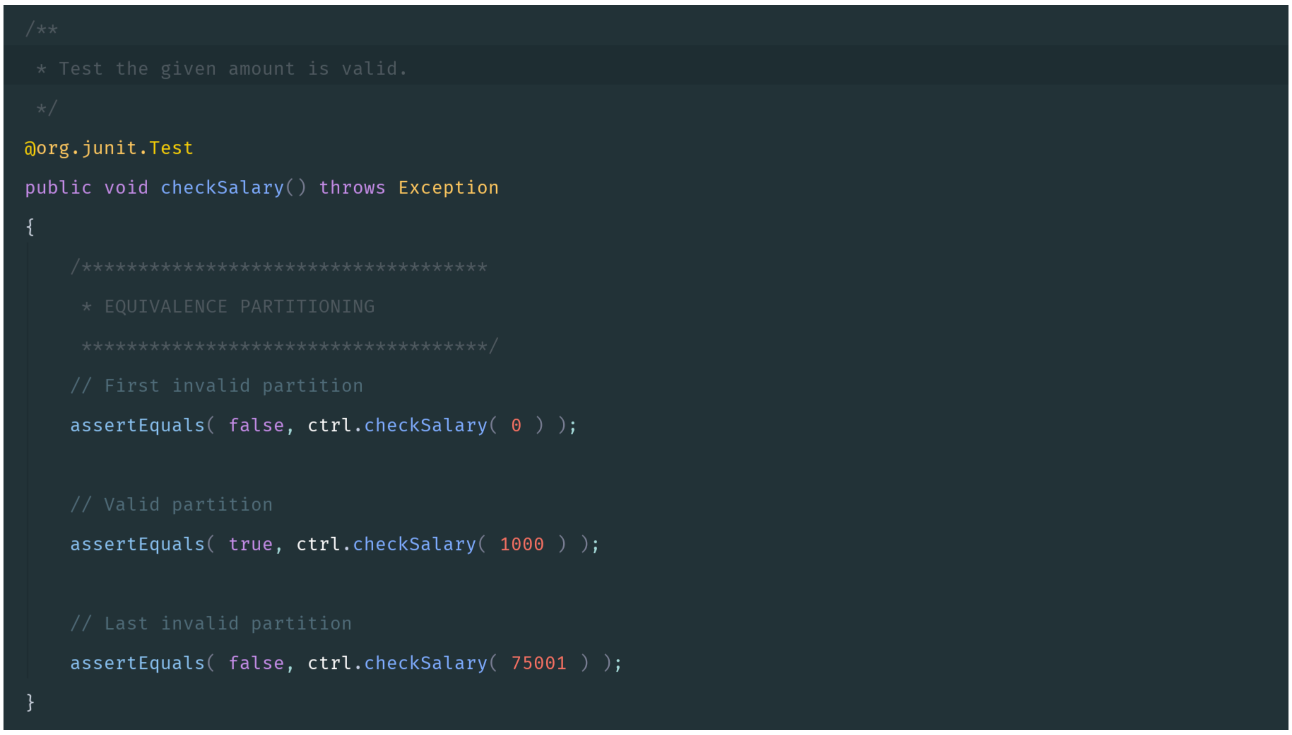
```java
/**
 * Test the given integer from 1-1000 is even.
 */
@org.junit.Test
public void isEven() throws Exception
{
    /************************************
     * EQUIVALENCE PARTITIONING
     ************************************/
    // First invalid partition
    assertEquals( false, ctrl.isEven( 0 ) );

    // Valid partition
    assertEquals( true, ctrl.isEven( 500 ) );

    // Last invalid partition
    assertEquals( false, ctrl.isEven( 1001 ) );
}
```

Partitions	Input	Expected	Result
First invalid partition	0	false	false
Valid partition	500	true	true
Last invalid partition	1001	false	false

2. Make equivalences classes for an input variable that represents a mortgage applicant's salary. The valid range is $1,000 pr. month to $75,000 pr. month



```java
boolean checkSalary(int amount)
{
    return amount >= 1000 && amount <= 75000;
}
```



```java
/**
 * Test the given amount is valid.
 */
@org.junit.Test
public void checkSalary() throws Exception
{
    /************************************
     * EQUIVALENCE PARTITIONING
     ************************************/
    // First invalid partition
    assertEquals( false, ctrl.checkSalary( 0 ) );

    // Valid partition
    assertEquals( true, ctrl.checkSalary( 1000 ) );

    // Last invalid partition
    assertEquals( false, ctrl.checkSalary( 75001 ) );
}
```

Partitions	Input	Expected	Result
First invalid partition	0	false	false
Valid partition	1000	true	true
Last invalid partition	75001	false	false

3. Make equivalences classes for the input variables for this method:

```
static int getNumDaysinMonth(int month, int year)
{
    try
    {
        YearMonth ym = YearMonth.of( year, month );
        return ym.lengthOfMonth();
    }
    catch( DateTimeException ex )
    {
        return 0;
    }
}
```

```
/**
 * Test the number of days in a specific month and year.
 */
@org.junit.Test
public void getNumDaysinMonth() throws Exception
{
    /************************************
     * EQUIVALENCE PARTITIONING
     ************************************/
    // First invalid partition
    assertSame( 0, Controller.getNumDaysinMonth( 0,0 ) );

    // Valid partition
    assertSame( 31, Controller.getNumDaysinMonth( 1,2017 ) );

    // Last invalid partition
    assertSame( 0, Controller.getNumDaysinMonth( 13,100000 ) );
}
```

Partitions	Input	Expected	Result
First invalid partition	0, 0	0	0
Valid partition	1, 2017	31	31
Last invalid partition	13, 100000	0	0

Boundary Value Analysis

1. Do boundary value analysis for equivalence partitioning exercise 1

```
/**
 * Test the given integer from 1-1000 is even.
 */
@org.junit.Test
public void isEven() throws Exception
{
    /************************************
     * BOUNDARY VALUE ANALYSIS
     ************************************/
    // First invalid partition
    assertEquals( false, ctrl.isEven( 0 ) );

    // Valid partition
    assertEquals( false, ctrl.isEven( 1 ) );
    assertEquals( true, ctrl.isEven( 1000 ) );

    // Last invalid partition
    assertEquals( false, ctrl.isEven( 1001 ) );
}
```

Partitions	Input	Expected	Result
First invalid partition	0	false	false
Valid partition (min)	1	false	false
Valid partition (max)	1000	true	true
Last invalid partition	1001	false	false

2. Do boundary value analysis for equivalence partitioning exercise 2

```java
/**
 * Test the given amount is valid.
 */
@org.junit.Test
public void checkSalary() throws Exception
{
    /************************************
     * BOUNDARY VALUE ANALYSIS
     ************************************/
    // First invalid partition
    assertEquals( false, ctrl.checkSalary( 0 ) );

    // Valid partition
    assertEquals( true, ctrl.checkSalary( 1000 ) );
    assertEquals( true, ctrl.checkSalary( 75000 ) );

    // Last invalid partition
    assertEquals( false, ctrl.checkSalary( 75001 ) );
}
```

Partitions	Input	Expected	Result
First invalid partition	0	false	false
Valid partition (min)	1000	true	true
Valid partition (max)	75000	true	true
Last invalid partition	75001	false	false

3. Do boundary value analysis for equivalence partitioning exercise 3

```java
/**
 * Test the number of days in a specific month and year.
 */
@org.junit.Test
public void getNumDaysinMonth() throws Exception
{
    /************************************
     * BOUNDARY VALUE ANALYSIS
     ************************************/
    // First invalid partition
    assertSame( 0, Controller.getNumDaysinMonth( 0,0 ) );

    // Valid partition
    assertSame( 31, Controller.getNumDaysinMonth( 1,1975 ) );
    assertSame( 31, Controller.getNumDaysinMonth( 12,2017 ) );

    // Last invalid partition
    assertSame( 0, Controller.getNumDaysinMonth( 13,100000 ) );
}
```

Partitions	Input	Expected	Result
First invalid partition	0, 0	0	0
Valid partition (min)	1, 1975	31	31
Valid partition (max)	12, 2017	31	31
Last invalid partition	13, 100000	0	0