Mile1 -Student Grade Calculation -- Project Design

Set of student data is available in an array of Student objects. If the given object has any errors, then, the program is expected to return appropriate error messages. Or, if given object has no data errors, then, we need to find the grade and print the same.

Package 1: com.mile1.bean

Description Instance variables To be Auto generated
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To be Auto generated

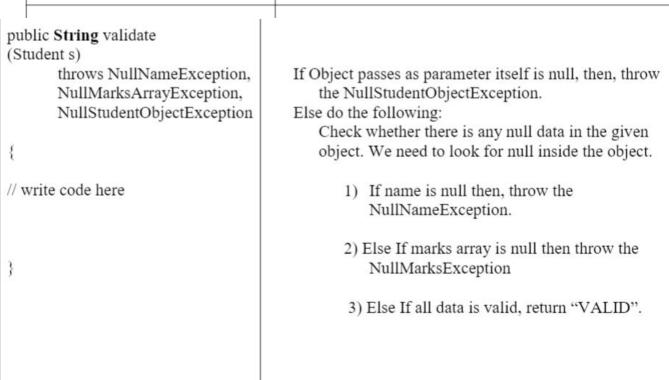
Package 2: com. mile1.exception

All the classes in this package should extend the Exception class.

Class	Method	Description
NullMarksArrayException	Override toString() method	Return "mark array is null"
NullNameException	Override toString() method	Return "name is null"
NullStudentObjectException	Override toString() method	Return "object is null"

Package 3: com.mile1.service

Class StudentReport		
Method	Description	
public String findGrades (Student studentObject) { // write code here }	Assumption: Only valid objects are passed to this method. So, just concentrate on the logic part. Get the marks from the given object studentObject. if (any one of the marks is less than 35) then grade is "F"; else do the following: Find the Sum of all the marks. if (sum <150) then grade is "C"; else if (sum <200) then grade is "B"; else if (sum <250) then grade is "A"; else if (sum <250) then grade is "A"; return the grade;	



Package3 com. mile1.service

Class StudentService				
Method	Description			
public int findNumberOfNullMarksArray (Student s []) { // write code here } If you are not careful, you will get NullPointerException in this method.	This method is used to count the number of objects where the marks array is null. Let C=0; Check whether the s is not null. If so, then for all the objects in the s array: if the individual object is not null, then check whether the marks array is null. If so, increase C by 1. Return latest Count value;			
public int findNumberOfNullName (Student s []) { // write code here } Note: If you are not careful, you we get NullPointerException in this method.	This method is used to count the number of objects where the name is null. // Code like above method // refer findNumberOfNullMarksArray			
ablic int adNumberOfNullObjects student s []) { // write code here you are not careful, you will get aullPointerException in this	This method is used to count the number of null objects. Let C=0; Check whether the s is not null. If so, then for all the objects in the s array, if the individual object is null, then increase C by 1. Return latest Count value.			

public static void **main** (String [] args): // code as per the following explanation

This main method is used to call the various methods defined in StudentReport class and StudentService class.

- 1) Call the **validate** method for all the objects available in *data* array.
- If any exception arises during validation, catch the exception and call the printStackTrace () method on that object.
- If validate method returns "VALID" then, call the findGrades method & print the result returned by findGrades method.

Create StudentService Object.

Using the above object, Call the findNumberOfNullMarksArray(data) method and print the result. Call the findNumberOfNullName(data) method and print the result. Call the findNumberOfNullObjects(data) method and print the result.

Sample Test Cases which are applied on the above project:

```
TC1 -- Calculate the grades for valid objects - Check for A+ grade computation.
```

TC2 -- Calculate the grades for valid objects - Check for F grade computation.

Test for validate method in service package:

Check whether the validate method handles the following situations.

```
TC3 -- If the Object is null, throw NullStudentObjectException ().
```

TC4-- If the Name is null, throw NullNameException ().

TC5 -- If the Marks array is null, throw NullMarksArrayException ().

Test for counting methods in service package:

```
TC6 - Test findNumberOfNullName function.
```

TC7 - Test findNumberOfNullObjects function.

TC8 -- Test findNumberOfNullName

SAMPLE DATA SET1:

}

Note that your program will be tested with another set of data. Not this set of data.

```
public void init ()

s [0] = new Student ("A1", new int [] {72,73,74});

s [1] = new Student ("B1", new int [] {75,76,77});

s [2] = new Student ("C1", new int [] {99,99,99});

s [3] = new Student ("C3", new int [] {100,100,99});

s [4] = new Student ("B2", new int [] {13,88,13});

s [5] = new Student ("C3", new int [] {14,14,99});

s [6] = new Student ("A2", new int [] {77,55,12});

s [7] = new Student (null, new int [] {13,88,13});

s [8] = new Student ("A2", null);

// this is invalid object -- so no grade calculation

s [9] = null; // this is invalid object - so no grade calculation

expectedgrades = new String [] {"A","A","A+","F","F","F","F","F"};
```