LAB 5:
Iterators , Hashmap and Haset

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1   Class Student

Make the following changes in the provided Student class.

1. Declare two variables one to store grade and one to store percentage.

2. write a method calculate grade which will calculate grade and assign it to the grade variable. Grading policy is as follows :

Marks Equal or above	Grade
85	A
75	B
60	C
50	D
Below 50	F

3. write a method print result card that will print marks in all of the subjects total marks , percentage and grade. Example :

RESULT CARD
Student Name: Ali
Father Name: Muhammad subhan

Physics: 98
Chemistry: 76
Biology: 76
Math: 98
English: 76
——————————-

Total: 424/500
——————————-

Percentage: 84.0
Grade: B

2 Iterator : Student Organizer

Now create a new class StudentOrganizer.

1. Declare a ArrayList of student type

2. Write a method to add Student object to collection.

3. Write a method to remove Student object from collection.

   - Use foreach loop and try to remove a particular student from collection.
   - implement the same method using iterator.

4. Write a method that returns count of Student objects in collection

5. Write a method that will print result of All Students.[Hint: use for each loop to print result of all students. Use Print result method of Student Class.]

6. Write a method that search a student based on its name. The method will return true if name found otherwise false. Print appropriate message if search fails.

7. Write a method that will print result of Student name passed in parameter.

8. Write a method that prints the names of all the students in the collection. [implement this method using iterator only]

9. Write Method PrintDuplicate. This method will print the name of students if there are more than one student of same name.

10. Write a method that prints the average marks of the Students in Specific Subject. The method will get subject name as input and will sum up subjects marks of all students and then divide it with number of students.

11. Write a method that prints the average marks of the Students in the collection. [You have to get totals of all subjects marks for each student. Then add these totals and divide with number of student.]

12. write a main method and add 10 students to student organizer and call each of the above method.

3 HashSet : Word Count program

As you know HashSet stores uniques elements so use Hashset to count unique words in a file.

- Use the File Scanner to read the contents of any large file

- Create a loop that reads every word in file and adds it to HashSet.

- Print the size of HashSet

4 HashMap : contacts

create a HashMap in a class named **contacts** that will store contacts.The key of Hashmap will be name of string type and the value will be phone number of data type integer. Write the following methods :

1. write a method to add contact.

2. write a method to search contact. the method will take contact name and return its phone Number.

3. write a method to remove contact.

4. write a method showDuplicates() that will print all duplicate contacts.

5. write a method mergeDuplicates that will delete are duplicates.

6. write a main method and call each of the above function.

5 Reading Links

Click on the names of the following to open documentation in browser :

- HashMap

- HashSet

- Iterator

- Strings

6 Submission guidelines

- Your files should be rename with your rollnumber as :

  - XXX-Student.java
  - XXX-StudenOrganizer.java
  - XXX-Contacts.java
  - XXX-WordCount.java

- At the top of the every file put title in comments as:
  LAB 5 : Solution
  Your name
  your roll no. XXX-BSCS-20XX (Section XX)

- Do not remove comments in the provided files and implement methods in the same order.

- submitted lab should have proper comments , me variable names and formatting.

- No collaboration/group work is required. Copied assignments will get no marks.

- Labs Submitted After Deadline or not following submission guidelines will get No marks.

- for any issues email at :

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