Java SE Programming Essentials

Training Exam

Document Code	25e-BM/HR/HDCV/FSOFT
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RECORD OF CHANGES

No	Effective Date	Change Description	Reason	Reviewer	Approver
1	12/06/2020	Create a new Exam	Create new	DieuNT1	VinhNV

Contents

CODE	:	JPE.Pratice.01
TYPE	:	Long
LOC	:	n/a
DURATION	:	180 minutes

General Requirements

Require 01: Working tools and Delivery requirements

- **Working tools**: Eclipse IDE for Java, an appropriate Database (SQL Server, MySQL, Oracle, Derby 10.14) is downloaded and ready to use.
- **Delivery**: Source code and test results in a compressed archive.

Require 02: Technologies

The product illustrates:

- Base Java knowledge in the course.
- Java Introduction (data type & variable)
- Control Flow Statements
- Array

Require 03: Technical Requirements

- Use Object-Oriented programming style.
- Follow the standard naming and coding convention.
- Add appropriate comments for each class, method, attribute, …
- Use console application template
- Create a new project and the appropriate packages

Create a project named **JPE.Practice.01** to resolve the follow problems:

Problem 01. Control Flow, Operator

Objectives:

- Understand basics of programming such as variables, conditional operators, control flow.

Problem Descriptions:

Write a method to input value that returns all of prime numbers.

Create a package named ***fa.training.problem01*** and class named **PrimeNumbers** that contains the following method to resolve the above problem:

```
public static String listingAll(Integer inputNumber) {

}
pl
```

Using **main** method to write four test cases which exercise **listingAll** method:

Testcase 1:

- Input: 100
- Output: returns [2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97].

Testcase 2:

- Input: 1
- Output: returns [].

Testcase 3:

- Input: 150
- Output: returns [2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97, 101, 103, 107, 109, 113, 127, 131, 137, 139, 149].

Testcase 4:

- Input: 200
- Output: returns [2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97, 101, 103, 107, 109, 113, 127, 131, 137, 139, 149, 151, 157, 163, 167, 173, 179, 181, 191, 193, 197, 199].

Estimate time: 60 minutes

Mark scale: 40%

- Create package, class, method: 10%;
- Problem solving : 70%;
- Main method : 20%

Problem 02. Array

Objectives:

- Understand basics of Numbers
- Apply Java Array and control flow to the practice

Problem Descriptions:

Write a program to sort an input Array on the following request:

- All odd numbers are to the left
- All even numbers are to the right
- All odd numbers are sorted in ascending order
- All even numbers are sorted in descending order
- Example: Input Array = [3, 5, 6, 2, 1, 8]

  Output Array = [***1, 3, 5, 8, 6, 2***]

Functional Requirements:

Create a package named ***fa.training.problem02*** and class named **SpecialSort** that contains the following method to resolve the above problem:

```
public String sort(ArrayList arr) {

}
```

Using **main** method to write four test cases which exercise **sort** method:

Testcase 1:

- Input: Array = [3, 5, 6, 2, 1, 8]
- Output: return Array = [1, 3, 5, 8, 6, 2].

Testcase 2:

- Input: Array = [3, 5, 9, 7, 1, 8]
- Output: return Array = [1, 3, 5, 7, 9, 8].

Testcase 3:

- Input: Array = [2, 4, 8, 6, 1, 9]
- Output: return Array = [1, 9, 8, 6, 4, 2].

Testcase 4:

- Input: Array = [2, 4, 3, 5, 1, 9]
- Output: return Array = [1, 3, 5, 9, 4, 2].

Testcase 5:

- Input: Array = [8, 4, 6, 2, 20, 100]
- Output: return Array = [100, 20, 8, 6, 4, 2].

Estimate time: 120 minutes

Mark scale: 60%

- Create package, class, method: 10 %;
- Problem solving : 70%;
- Main method : 20%

-- THE END --