소프트웨어 프로젝트1

– Project 1-1 (ver2) –

Due date : 2019.04.04 23:59:59

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1. (loop, array) Write a JAVA program that orders an array of integer in descending order using bubble sort algorithm. You can refer the followings as an example of output

   (condition : Don't use any sort API, The Max length of the array is 10)

   Array Before Bubble Sort

   5 90 35 45 150 3

   Array After Bubble Sort

   150 90 45 5 3

2. (loop, string) Write a program that reads one line of input text and breaks it up into words. The words should be output one per line. A word is defined to be a sequence of letters. Any characters in the input that are not letters should be discarded. You can refer the followings as an example of input and output.

   (condition: You must use **scanner**(input function))

   User input :

   i have2&* n()*o ide%&57a.ver2

   output :

   I

   have

   no

   idea

3. Write a program that simulates rolling a pair of dice. You can simulate rolling one die by choosing one of the integers 1,2,3,4,5 and 6 at random. The number you pick represents the number on the die after it is rolled. The expression

   (int)(Math.random()*6) +1

   does the computation you need to select a random integer between 1 and 6. You can assign this value to a variable to represent one of the dice that are being rolled. Do this twice and the results together to get the total roll. Your program should report the number showing on each die as well as the total roll. For example :

   The first die comes up 3

   The second die comes up 5

   Your total roll is 8

4. Write a program that uses the methods of ArrayList. This program prints 10 numbers randomly generated between 0 to 20 in ascending order. Your program should provide insert, remove, and search operations. Note that numbers should be sorted after all operations are finished. The following is an example.

   (condition: You must create new class and use, except main class, The number in the list do not overlap, Don't use any sort API).[ver2]

   List: 1 2 4 5 6 8 10 11 13 14

   Input your command : a

   Input number to add: 7

   List: 1 2 4 5 6 7 8 10 11 13 14

   Input your command : r

   Input number to remove: 1

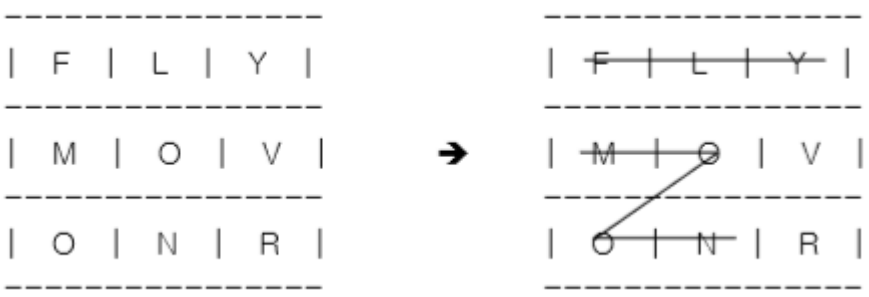
   List: 2 4 5 6 8 10 11 13 14

   Input your command : s

   Input number to search: 5

   Index of 5 is 2.

5. Boggle is a simple game that words sequentially linear-connected in a NxN grid. In the following example, you can find 2 words the “FLY”, “MOON”.



Design a light-weight boggle game that satisfies the following requirements

1) Make a Boggle with 3x3 grid.
2) Letters are randomly allocated
3) User may input the word. Find the word at the grid
4) Each word is at least three letters.

The following is an output example.

(condition: You must create new class except main class, Print error message if input word size is less than 3.).[ver2]

```
-------------
| A | F | Y |
-------------
| D | V | T |
-------------
| D | C | I |
-------------

Input word: DCI
Exist
Input word: ASCT
Non-exist
Input word:
```

6. Write a program that designs cars by using a class hierarchy. You should print class name, instance variables, and methods of all classes. Include two super classes named "Brand" that is a manufacture and "Model" that is a car type such as sedan, truck, motorcycle, etc. You should make at least 6 car classes. (Note: Draw your class hierarchy in your document.)

◆ **보고서에 필수적으로 포함되어야 하는 항목**

- ✓ **Introduction** : 각 문제 별로 간단한 설명
- ✓ **Result** : 각 문제 별로 수행한 내용을 결과 캡쳐 이미지와 함께 설명
- ✓ **Code** : 각 문제 별로 직접 구현한 코드
- ✓ **Consideration** : 해당 프로젝트 대한 고찰(최소 5줄 이상)

◆ **제한사항 및 구현 시 유의사항**

- ✓ 문제에 제시한 조건(condition)을 무조건 지킴
- ✓ 프로그램 구조에 대한 디자인이 최대한 간결하도록 고려하여 설계
- ✓ 제시한 예시 이외에 테스트에서도 동작이 가능해야 함
  - 제시한 조건 범위 내에서 테스트 진행,
  - 해당 프로젝트의 6번과 같은 경우 정해진 답이 없기 때문에 추가 테스트는 진행하지 않음.
- ✓ 주석은 반드시 작성(없으면 감점)
- ✓ **채점 기준** : 다양한 테스트에서의 동작 여부, 주석 작성, 보고서 필수항목 여부,

◆ **제출기한 및 제출방법**

- ✓ 제출기한 : 2019년 4월 4일 23:59:59 까지 제출
- ✓ 제출방법 : 소스코드(*.java)와 보고서 파일(pdf)을 함께 압축하여 U-campus에 제출
- ✓ 제출 형식 : **학번_project1-1.zip** (ex. 2019110608_project1-1.zip)