1D Arrays – Scores FRQ

AP® COMPUTER SCIENCE A

GENERAL SCORING GUIDELINES

Apply the question assessment rubric first, which always takes precedence. Penalty points can only be deducted in a part of the question that has earned credit via the question rubric. No part of a question (a, b , c) may have a negative point total. A given penalty can be assessed only once for a question, even if it occurs multiple times, or in multiple parts of that question. A maximum of 3 penalty points may be assessed per question.

1-Point Penalty

(w) Extraneous code that causes side effect (e.g. printing to output, incorrect precondition check)

(x) Local variables used but none declared

(y) Destruction of persistent data (e.g., changing value referenced by parameter)

Mr Lee's 1-Point Penalty:

- Inefficient, "long winded" or "messy" difficult to understand code which takes longer to write than standard more efficient solutions.
    - In an exam you need to save time by writing quickly hand writable efficient code which is easy for AP readers to understand.

No Penalty

- Extraneous code with no side effect (e.g., precondition check, no-op)
- Spelling/case discrepancies where there is no ambiguity*
- Local variable not declared provided other variables are declared in some part
- Keyword used as an identifier
- Common mathematical symbols used for operators (x • ÷ ≤ ≥< > ≠)
- `[ ]` vs. `()`
- Extraneous [ ] when referencing entire array
- `[i,j]` instead of `[i] [j]`
- `=` instead of `==` and vice versa
- Missing `{ }` where indentation clearly conveys intent
- Missing `()` around `if` or `while` conditions

** Spelling and case discrepancies for identifiers fall under the "No Penalty" category only if the correction can be unambiguously inferred from context; for example, "total" instead of "totl". As a counterexample, that if the code declares "int G=99 , g=O; ", then uses "while (G < 10) " instead of "while (g < 10) ", the context does not allow for the reader to assume the use of the lower-case variable.*

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Consider a grade-averaging scheme in which the final average of a student's scores is computed differently from the traditional average if the scores have "improved." Scores have improved if each score is greater than or equal to the previous score. The final average of the scores is computed as follows.

A student has *n* scores indexed from *0* to *n - 1*. If the scores have improved, only those scores with indexes greater than or equal to *n / 2* are averaged. If the scores have not improved, all the scores are averaged.

The following table shows several lists of scores and how they would be averaged using the scheme described above.

Student Scores	Improved?	Final Average
50, 50, 20, 80, 53	No	(50 + 50 + 20 + 80 + 53) / 5.0 = 50.6
20, 50, 50, 53, 80	Yes	(50 + 53 + 80) / 3.0 = 61.0
20, 50, 50, 80	Yes	(50 + 80) / 2.0 = 65.0

```
int[] scores;  // contains scores.length values
               // scores.length > 1
               // all values >= 0 && <= 100
```

(a) Complete the code segment below.

```
// prints the boolean value true if each successive value in
// scores is greater than or equal to the previous value;
// otherwise, prints false
```

(b) Complete the code segment below.

```
// if the values in scores have improved, prints the average
// of the elements in scores with indexes greater than or
// equal to scores.length/2;
// otherwise, returns the average of all of the values in
// scores
```