2026

AP® Computer Science A

Free-Response Questions

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COMPUTER SCIENCE A
SECTION II
TIME – 1 HOUR AND 30 MINUTES

Directions:

Section II has 4 free-response questions and lasts 1 hour and 30 minutes.

All program segments must be written in Java.

Java Quick Reference information for programming questions can be used throughout the exam. A digital version is available in this application.

Assume that the classes listed in the Java Quick Reference have been imported where appropriate.

Unless otherwise noted in the question, assume that parameters in method calls are not `null` and that methods are called only when their preconditions are satisfied.

In writing solutions for each question, you may use any of the accessible methods listed in classes defined in that question. Writing significant amounts of code that can be replaced by a call to one of these methods will not receive full credit.

You may use the available paper for scratch work, but credit will only be given for responses entered in this application. Text you enter as an annotation will **not** be included as part of your answer.

You can go back and forth between questions in this section until time expires. The clock will turn red when 5 minutes remain—**the proctor will not give you any time updates or warnings.**

Note: This exam was originally administered digitally. It is presented here in a format optimized for teacher and student use in the classroom.

During the AP Exam administration, students have access to reference information. To see the reference information for this course, please visit AP Central: https://apcentral.collegeboard.org/exam-administration-ordering-scores/administering-exams/subject-specific/reference-information

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4. The `Space` class is used to represent the spaces on a game board. A partial definition of the `Space` class is shown.

```
public class Space
{
   /**
    *  Returns the color of the space
    */
   public String getColor()
   { /* implementation not shown */ }

   /**
    *  Returns the point value of the space
    */
   public int getPoints()
   { /* implementation not shown */ }

   /* There may be instance variables, constructors, and methods
      that are not shown. */
}
```

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The `GameBoard` class maintains a two-dimensional array of `Space` objects that represents a game board. A partial definition of the `GameBoard` class is shown.

```
public class GameBoard
{
   private Space[][] board;

   /**
    *  Returns the point value of the row in board specified by the
    *  parameter. The point value is the sum of the points in the row,
    *  or two times the sum of the points in the row if all spaces in
    *  the row are the same color.
    *  Preconditions: No elements of board are null.
    *                 board has at least two rows and
    *                 at least two columns.
    *                 targetRow is a valid row index.
    */
   public int getPointsForRow(int targetRow)
   { /* to be implemented */ }

   /* There may be instance variables, constructors, and methods
      that are not shown. */
}
```

When an element of the two-dimensional array `board` is accessed, the first index is used to specify the row and the second index is used to specify the column.

Write the `GameBoard` method `getPointsForRow`. The method should return the point value of the spaces in the row specified by the parameter `targetRow`. The point value of a row is determined as follows.

- If not all spaces in the row are the same color, the point value for the row is the sum of the points in the row.
- If all spaces in the row are the same color, the point value for the row is two times the sum of the points in the row.

For example, suppose `board` has the following contents. For each element, the first value is the color and the second value is the point value.

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	0	1	2	3	4
0	"orange" 100	"red" 100	"blue" 500	"green" 500	"red" 100
1	"red" 300	"blue" 200	"blue" 400	"red" 100	"green" 100
2	"red" 200	"red" 300	"red" 100	"red" 200	"red" 200
3	"green" 100	"blue" 100	"blue" 200	"blue" 100	"blue" 200

For these contents of `board`, the expected behavior of `getPointsForRow` is as follows.

- The call `getPointsForRow(0)` should return `1300`. Not all spaces in this row are the same color, so the sum of the points in the row is returned.
- The call `getPointsForRow(2)` should return `2000`. The sum of the points in row 2 is `1000`, and all spaces in this row are the same color, so two times this sum is returned.

Complete method `getPointsForRow`.

```
/**
 *  Returns the point value of the row in board specified by the
 *  parameter. The point value is the sum of the points in the row,
 *  or two times the sum of the points in the row if all spaces in
 *  the row are the same color.
 *  Preconditions: No elements of board are null.
 *                 board has at least two rows and
 *                 at least two columns.
 *                 targetRow is a valid row index.
 */
public int getPointsForRow(int targetRow)
```

STOP

END OF EXAM

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