



AP[®] Computer Science A 2008 Scoring Guidelines

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Question 1: Flight List

Part A:	getDuration	4 points
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- +1 handle empty case
 - +1/2 check if `flights` is empty
 - +1/2 return 0 if empty
- +1 access start time
 - +1/2 access `flights.get(0)`
 - +1/2 correctly call `getDepartureTime` on a flight
- +1 access end time
 - +1/2 access `flights.get(flights.size()-1)`
 - +1/2 correctly call `getArrivalTime` on a flight
- +1 calculate and return duration
 - +1/2 call `minutesUntil` using `Time` objects
 - +1/2 return correct duration (using `minutesUntil`)

Part B:	getShortestLayover	5 points
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- +1 handle case with 0 or 1 flight
 - +1/2 check if `flights.size() < 2`
 - +1/2 return -1 in that case
- +1 traverse `flights`
 - +1/2 correctly access an element of `flights` (in context of loop)
 - +1/2 access all elements of `flights` (lose this if index out-of-bounds)
- +2 1/2 find shortest layover (in context of loop)
 - +1 get layover time between successive flights (using `minutesUntil`)
 - +1/2 compare layover time with some previous layover
 - +1 correctly identify shortest layover
- +1/2 return shortest layover

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Question 2: String Coder

Part A:	decodeString	4 1/2 points
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- +1 traverse parts
 - +1/2 correctly access an element of parts (in context of loop)
 - +1/2 access all elements of parts (lose this if index out-of-bounds)

- +2 retrieve substrings from masterString
 - +1/2 correctly call `getStart()` and `getLength()` on accessed part
 - +1 1/2 extract a substring from masterString
 - +1/2 `masterString.substring(X, Y)`
 - +1 extract correct substring

- +1 1/2 build and return decoded string
 - +1 correctly build string from substrings of masterString
 - +1/2 return built string

Part B:	encodeString	4 1/2 points
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- +1/2 construct an `ArrayList<StringPart>` (must assign to a variable, generic okay)

- +3 1/2 find, collect string parts, and build list (in context of loop)
 - +1 `findPart(X)`, where X is word or a substring of word
 - +1 calls to `findPart` involve progressively smaller suffixes of word
 - +1/2 add found string part to `ArrayList` of string parts
 - +1 build correct list of string parts (must have used `findPart`)

- +1/2 return `ArrayList` of string parts

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Question 3: Opossum Critter (GridWorld)

Part A:	<code>processActors</code>	6 points
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- +1/2 initialize friend/foe counter(s)
- +2 1/2 loop and identify actors
 - +1 traverse `actors`
 - +1/2 correctly access an element of `actors` (in context of loop)
 - +1/2 access all elements of `actors` (lose this if index out-of-bounds)
 - +1 1/2 identify actor category and update counters (in context of loop)
 - +1/2 call `isFriend(nextActorFromList)`
 - +1/2 call `isFoe(nextActorFromList)`
 - +1/2 update counters appropriately in both cases
- +3 update `OpossumCritter` state
 - +1 correctly identify whether to play dead
 - +1 appropriate result if playing dead
 - +1/2 `setColor(Color.BLACK)`
 - +1/2 `numStepsDead++`
 - +1 appropriate result if normal
 - +1/2 `setColor(Color.ORANGE)`
 - +1/2 `numStepsDead = 0`

Part B:	<code>selectMoveLocation</code>	3 points
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- +1 determine appropriate case (using `==` with `Color` is okay)
 - +1/2 correctly identify one case (dead, playing dead, normal)
 - +1/2 correctly identify all three cases
- +2 appropriate return values
 - +1/2 return null if really dead
 - +1/2 return current location if playing dead
 - +1 return `super.selectMoveLocation(locs)` otherwise
 - +1/2 `super.selectMoveLocation(locs)`
 - +1/2 return value from call

Usage:

- 1 if violate postconditions (e.g., `removeSelfFromGrid()`)
- 1 for `BLACK` or “Black” instead of `Color.BLACK`
- 1/2 for call to (nonexistent) default `Location` constructor

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Question 4: Checker Objects (Design)

Part A:	SubstringChecker	4 points
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- +1/2 class SubstringChecker implements Checker
- +1/2 declare private instance variable of type String
- +1 constructor
 - +1/2 SubstringChecker(String goalString)
 - +1/2 initialize instance variable to parameter
- +2 accept method
 - +1/2 public boolean accept(String text)
 - +1 1/2 determine whether to accept
 - +1/2 attempt to find instance variable in *text*
(either call `indexOf`, `contains`, or compare with substrings)
 - +1 return correct boolean value in all cases

Part B:	AndChecker	4 points
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- +1/2 class AndChecker implements Checker
- +1/2 declare private instance variable(s) capable of storing two Checker objects
- +1 constructor
 - +1/2 AndChecker(Checker c1, Checker c2)
 - +1/2 initialize instance variable(s) to parameters
- +2 accept method
 - +1/2 public boolean accept(String text)
 - +1 1/2 determine whether to accept
 - +1/2 attempt to call `accept(text)` on both stored Checkers
 - +1 return correct boolean value in all cases

Part C:	yummyChecker	1 point
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- +1 correctly assign yummyChecker