



AP Computer Science A 2000 Scoring Guidelines

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2000 AP[®] Computer Science A Question 1

Part A:	IsMode	2 pts
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- +1 attempt (needs at least one on task comparison, `>=` is OK, `| |` instead of `&&`)
- +1 correct (1 for true and 0 for false is OK)

Note: loop that bears no relation to `k` or that destroys `k` gets no points

Part B:	ModeIndex	2 pts
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- +1 search array
 - +1/2 attempt
 - +1/2 correct (note: any length bound `> data.length()` or no length bound works)
- +1 identify and return mode index
 - +1/2 attempt (calls `IsMode` or reimplements it – reimpl must be perfect to get attempt)
 - +1/2 correct

Note: `IsMode` function used as `void` function loses the full identify mode index point

Note: Without a loop, `IsMode` must be called correctly to earn mode index attempt ½ point

Part C:	PrintHistogram	5 pts
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- +1 get value of mode
 - +1/2 attempt (must attempt to find mode index before printing anything)
 - +1/2 correct (k = `ModeIndex(data)` loses correct if `data[k]` is not used later in the computation)
- +1 scan array
 - +1/2 attempt (must have attempt to scan the data and draw a bar in loop)
 - +1/2 correct
- +2 compute correct bar length
 - +1 attempt (must use mode value and `longestBar`)
(In the absence of a mode value, must use a data element and `longestBar`)
 - +1 correct
- +1 draw bar
 - +1/2 attempt (must have a loop)
 - +1/2 correct (must use `barChar` and include `endl`)

NOTE: If `A[k]` is used instead of `data[k]`, it is –1/2 usage, confused id

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A Question 2

Part A: **IsOdd** **2 pts**

- +1 attempt (must include test of this `BigInt` object's digit(s) and/or value using `/`, `%`, or list of odd or even digits, and intent to return true in some cases, false in others)
- +1 correct

Part B: **Power** **7 pts**

- +1 declarations and initializations
 - +1/2 product declared as `BigInt` and initialized to `1`
 - +1/2 copies of `exp` and `base` properly declared and initialized
- +1 loop with correct bounds
- +1 test for odd exponent
 - +1/2 attempt (no pt for use of `%` or `/`, no pt if `IsOdd` used as void function)
 - +1/2 correct
- +1 update product correctly (must be inside some test for odd)
- +1 update base copy correctly
- +1 update exponent copy
 - +1/2 attempt (must have some reference to `DivBy2`)
 - +1/2 correct
- +1 return product

Usage (Part B only):

- 1/2 call to private member function (e. g. `Normalize()`, `GetDigit()`)

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A Question 3

Part A: **Occurrences** **3 pts**

- +1 loop over data from `1` to `C.Size()` or until found (Must use `lcv` in loop)
 - +1/2 attempt (`C.length()` instead of `C.Size()` OK)
 - +1/2 correct
- +1 test for match (Must use class notation, not `C[]`)
 - +1/2 attempt
 - +1/2 correct
- +1 state: initialize, update (must be inside test), and return count
 - +1/2 attempt (need ongoing updates inside test and at least one of initialize and return)
 - +1/2 correct

Part B: **RemoveDuplicates** **2 pts** No vector notation permitted

- +1 attempt (must include loop and attempt to remove)
- +1 correct (Must call `Remove` correctly, i.e. `C.Remove(word)`)

Part C: **MostCommon** **4 pts**

- +1 check all values (must use `lcv` in loop)
 - +1/2 attempt (`C.length()` instead of `C.Size()` OK)
 - +1/2 correct (note: must check index `1` to `C.Size()` inclusive)
- +1 get count for item (No vector notation permitted)
- +1 correct comparison of old maximum with new count and attempt to update old maximum
- +1 state: update `max`, `word`, and/or index and return word
 - +1/2 attempt (need ongoing updates of value(s) and at least one of initialization or return)
 - +1/2 correct (includes initialization and return; cannot use vector notation)

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A Question 4, AB Question 1

Part A: GetCoordinates 2 pts

- +1 Find row and column
 - +1/2 attempt (must examine `ch` and `myMat`)
 - +1/2 correct (no loop errors)
- +1 construct and return `Point`
 - +1/2 attempt (must try to construct or assign to a `Point`)
 - +1/2 correct (must get attempt to find row and column)

Part B: EncryptTwo 4 pts

- +1 get coordinates
 - +1/2 attempt (must: refer to elements of `pair` and use return value as a `Point` throughout rest of part)
 - +1/2 correct
- +1 special case(s) – same columns, same rows
 - +1/2 attempt (to check that `int` coordinates lie on a line instead of at opposite corners of a box)
 - +1/2 correct (tests and handles same column case)
(note: same rows can be done as general case)
- +2 general case
 - +1 attempt (must set elements of an `apstring` using elements of `myMat`)
 - +1 correct (including return)

Part C: EncryptWord 3 pts

- +1 loop over pairs
 - +1/2 attempt (must attempt to process pairs of consecutive letters from `word`)
 - +1/2 correct (stay in bounds, appropriate number of iterations)
- +2 update result
 - +1/2 form two character `apstring` from consecutive letters from `word` and use later in context of encryption
 - +1/2 call `EncryptTwo()` with parameter, or reimplement perfectly
 - +1/2 correct last char when odd length
 - +1/2 result assembled as an `apstring` in proper order and returned

Usage:

- 1 incorrect use of `apstring`

`char c, d;`
`apstring s, t(pair);`

	<u>Correct examples</u>	<u>Incorrect examples</u>
1a.	<code>s = c; s += d;</code> or	<code>s = c + d;</code>
1b.	<code>s += c; s += d;</code>	

2. `t[0] = c; t[1] = d;` `s[0] = c; s[1] = d;`

3. `word.substr(k, 2)` `word.substr(k, k+1)`

4. `c = word[k];` `c = word.substr(k, 1);`

- 1/2 `Encryptor.myMat` in any part
- 1/2 modifying a `const` parameter (parts B and/or C); deduct at most once
- 0 confuse `()` and `[]`; confuse `->` and `.;` `apstring<char>`