| **(a)** | getNextLoc |  |  |
| --- | --- | --- | --- |
|  | **Scoring Criteria** | **Decision Rules** |  |
| **1** | Guards against out-of-bounds access of grid elements | Responses **can** still earn the point even if they  • fail to access any element of grid in this part, as long as the guard prevents the returned Location from being out of bounds  Responses **will not** earn the point if they  • return a Location that would be out of bounds | **1 point** |
| **2** | Accesses both an element of grid to the right and an element of grid below row and col | Responses **can** still earn the point even if they  • access elements of grid out of bounds  Responses **will not** earn the point if they  • fail to access elements of grid  correctly | **1 point** |
| **3** | Returns Location of appropriate grid element (*algorithm*) | Responses **can** still earn the point even if they  • incorrectly guard against out-of-bounds access of grid elements  Responses **will not** earn the point if they  • call the Location constructor incorrectly  • fail to consider all four cases | **1 point** |
|  |  | **Total for part (a)** | **3 points** |

| **(b)** | sumPath |  |  |
| --- | --- | --- | --- |
|  | **Scoring Criteria** | **Decision Rules** |  |
| **4** | Initializes and increases variable to store sum of grid values | Responses **can** still earn the point even if they  • fail to initialize a local variable in a recursive solution, as long as an element of the grid is added to the recursive call  Responses **will not** earn the point if they  • initialize the variable to something other than 0 or an element of grid  • increment the sum variable using something other than an element of grid | **1 point** |
| **5** | Determines the path based on successive calls to getNextLoc while current position is not the bottom-right position of grid (*no bounds errors*) (*algorithm*) | Responses **can** still earn the point even if they  • fail to access an element of grid  • call getNextLoc incorrectly  • access row/column of next location incorrectly  Responses **will not** earn the point if they  • fail to call getNextLoc  • fail to use row/column derived from getNextLoc return value in subsequent calls  • stop loop early (omit required path locations) or late (violate getNextLoc precondition) due to incorrect boundary condition | **1 point** |
| **6** | Calls getNextLoc (*in the context of a loop*) | Responses **can** still earn the point even if they  • call getNextLoc within an incorrect loop  Responses **will not** earn the point if they  • call getNextLoc on the class or on an object other than this (use of this is optional)  • fail to call getNextLoc with two  int arguments | **1 point** |
| **7** | Calls getRow and getCol on a  Location object | Responses **will not** earn the point if they  • call either method incorrectly | **1 point** |

| **8** | Accesses a grid element at positions derived from the call to the next location method | Responses **can** still earn the point even if they  • access an incorrect grid element  • only access the grid at row and col, if the solution is recursive and the parameters of the recursive call are derived from a call to the next location method | **1 point** |
| --- | --- | --- | --- |
| **9** | Computes sum of values along path (*algorithm*) | Responses **can** still earn the point even if they  • stop loop early or late due to incorrect boundary condition  • fail to return the computed sum (*return not assessed in this part*)  Responses **will not** earn the point if they  • fail to include the first or last visited location in the sum | **1 point** |
|  |  | **Total for part (b)** | **6 points** |
|  |  | **Total for question 4** | **9 points** |