**Assignment 07 – Marking Scheme**

**General Marking Notes**

* The deadline for grading is Monday, November 18th at 12:00pm (noon).
* If you have any questions email the official marking thread (send it to [cs135-markers@cs.uwaterloo.ca](mailto:cs135-markers@cs.uwaterloo.ca)) with the assignment instructor(s) CC’d (Kevin Lanctot: kevin.lanctot@uwaterloo.ca) so that all ISA’s and TAs can hear about clarifications or changes to the marking scheme.
* Please email [cs135@uwaterloo.ca](mailto:cs135@uwaterloo.ca) when you are finished marking each week. **Include a list of the common errors you encounter**.
* Guidelines from Assignment 06 carry forward.

|  |
| --- |
| **Q3a: Template Function – Rtree**  Template functionsshould look similar to this (there are variations in parameter naming and number of periods per ellipses which can be anywhere from 3 – 6 periods):  (define (rtree-template rt)  (cond  [(symbol? rt) (... rt ...)]  [(xnode? rt) (xnode-template rt)]  [(ynode? rt) (ynode-template rt)]))  Errors:   * Missing (... rt ...) * Template function has more than one parameter * Missing (symbol? rt) * Missing (xnode? rt) * Missing (ynode? rt) * Missing (xnode-template rt) * Missing (ynode-template rt) * Inclusion of non- predicate functions (i.e. (make-xnode ...), (xnode-val rt), etc.)   Exceptions:   * Order of (xnode? rt) and (ynode? rt) does not matter * Students may use else in the last cond condition |
| **Q3a: Template Function – XNode**  Template functionsshould look similar to this (there are variations in parameter naming and number of periods per ellipses which can be anywhere from 3 – 6 periods). Note that **order of selector functions does not matter**:    (define (xnode-template node)  (... (xnode-val node) ...  (rtree-template (xnode-left node)) ...  (rtree-template (xnode-right node)) ...))  Errors:   * Missing …s * Template function has more than one parameter * Missing (xnode-val node) * Missing(xnode-left node) * Missing(xnode-right node) * Missing(rtree-template (xnode-left node)) * Missing(rtree-template (xnode-right node)) * Inclusion of non-selector functions (i.e. (make-xnode ...), (xnode? node), (cond …), etc.) |
| **Q3a: Template Function – YNode**  Template functionsshould look similar to this (there are variations in parameter naming and number of periods per ellipses which can be anywhere from 3 – 6 periods). Note that **order of selector functions does not matter**:    (define (ynode-template node)  (... (ynode-val node) ...  (rtree-template (ynode-below node)) ...  (rtree-template (ynode-above node)) ...))  Errors:   * Missing …s * Template function has more than one parameter * Missing (ynode-val node) * Missing(ynode-below node) * Missing(ynode-above node) * Missing(rtree-template (ynode-below node)) * Missing(rtree-template (ynode-above node)) * Inclusion of non-selector functions (i.e. (make-ynode ...), (ynode? node), (cond …), etc.) |
| **Q3c: Helper Function Use**  Students should define a helper function for finding the max value of an XNode.  Errors:   * No helper function was defined/used for finding the max value of an XNode. |
| **Q1a, Q1b, Q3c: Binary Search**  Students should take advantage of the binary search property in a BSTD or RTree.    Errors:   * Students recurse on both the left and the right side at the same time in Q1a when node-key’s value is not within low and high’s range * Students recurse on both the left and the right side at the same time in Q1b when node-key’s value is not within low and high’s range * Students recurse on both the left and the right side at the same time in Q3c on an xnode |
| **Q3d: Helper Function Use**  Students should define a helper function that allows them to increment XNode and YNode values in an RTree.  Errors:   * No helper function was defined/used to increment XNode and YNode values in an RTree. |
| **Q3e: Helper Function Use**  Students should call the function rt-lookup that was defined in Q3b.  Errors:   * rt-lookup was not used in winsys-lookup’s solution. |