Chemistry

**Software Quality Assurance**

**SQA Implementation Checklist**

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| **Revision Number** | **Revision Date** | **Author** | **Summary of Changes** |
| 1 | 3-13-2013 | John Gibbons | Initial creation of document and first draft. |
| 2 | 3-14-2013 | John Gibbons | Second draft and additional items added. |
|  |  |  |  |

Implementation Checklist

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| --- | --- | --- | --- |
| **No.** |  | **Y, N, NA** | **Comments** |
|  | Documentation |  |  |
| 1 | Has all standards and guidelines been identified? | Y | IEEE and Object Oriented Design standards have been followed. |
| 2 | Were any changes made to the implementation document? | Y | Few minor requirements changes. |
| 3 | Have any rules been added for initial implementation document? | N |  |
| 4 | Is there a cover sheet and table of contents? | Y |  |
| 5 | Is there revision control? | Y |  |
| 6 | Has the implementation strategy been approved? | Y |  |
| 7 | Has all requirements been confirmed with the client? | Y |  |
| 8 | Has the Design documentation been approved? | Y |  |
| 9 | Has the Design checklist been performed? | Y | Passed. |
| 11 | Does the design solution meet the requirements? | Y | All requirements are fully implemented. |
| 12 | Is the set of deficiencies provided? | Y |  |
| 13 | Was this checklist conducted on schedule? | Y |  |
| 14 | Were all needed resources available to properly and fully perform this checklist at time of completion? | Y | All documentation was provided. |
|  | Schedule | **Y, N, NA** | **Comments** |
| 1 | Has the workload been appropriately divided upon members in the development team? | Y |  |
| 2 | Has the work breakdown structure been established? | Y |  |
| 3 | Has the work breakdown structure been approved? | Y |  |
| 4 | Has proper deadlines been set for the coding phase? | Y |  |
| 5 | Were those deadlines met within reason? | Y | With a few minor issues and setbacks. |
|  | Support Material | **Y, N, NA** | **Comments** |
| 1 | Was all source code provided? | Y | All hosted on a private Github. |
| 2 | Was all documentation provided? | Y | All provided in Google Docs. |
| 3 | Was Analysis report provided? | Y |  |
| 4 | Is the Analysis report in the correct format? | Y |  |
|  | Structure | **Y, N, NA** | **Comments** |
| 1 | Is the user interface user friendly? | Y |  |
| 2 | Is the coding style consistent? | Y |  |
| 3 | Has professional comments been provided? | Y | Some comments are lacking. However, necessary comments are all accounted for. |
| 4 | Is there code that could be condensed? | N |  |
| 5 | Is there code that could be re-written for higher optimization? | N |  |
| 6 | Is there repetitive code? | N |  |
| 7 | Does the code properly implement all requirements from the Analysis report? | Y | All requirements are fully implemented. |
| 8 | File Opening/Closing: Will the proposed requirements cause additional files to be opened and/or closed from the previous version? | N |  |
| 9 | Data Values: Will proposed changes to data values within the scope of the changes cause problems elsewhere? | N |  |
| 10 | Parameter Change: Will proposed changes affect the subroutines? | Y |  |
| 11 | File Position Change: Will proposed changes affect the files sensitive to record positioning? | N |  |
| 12 | Invalid Pointer: Will proposed changes affect existing linked data structures, possibly causing pointer exceptions? | N |  |
| 13 | Record Layout Change: Will proposed changes affect record layouts? | N |  |
| 14 | Is storage use efficient? | Y |  |
| 15 | Is the code consistent in style? | Y |  |
|  | Variables | **Y, N, NA** | **Comments** |
| 1 | Do all classes follow proper naming conventions? | Y |  |
| 2 | Do all methods follow proper naming conventions? | Y |  |
| 3 | Do all functions follow proper naming conventions? | Y |  |
| 4 | Do all variables follow proper naming conventions? | Y |  |
| 5 | Are there any unused variables? | N |  |
| 6 | Are variables of the correct types? | Y |  |
| 7 | Are accessors and mutators named properly and similarly? | Y |  |
| 8 | Are all array references in bounds? | Y |  |
|  | Loops and Branches | **Y, N, NA** | **Comments** |
| 1 | Do loops properly initialize and increment/decrement the variables properly? | Y |  |
| 2 | Are loops too nested? | N |  |
| 3 | Are nested loops properly nested? | Y |  |
| 4 | Are all cases covered in IF/ELSEIF/ELSE statements or CASE blocks? | Y |  |
| 5 | Does every switch statement have a default? | Y |  |
| 6 | Are loop termination conditions achievable? | Y |  |
| 7 | Does the code in the loop avoid manipulating the index variable or using it upon termination of the loop? | Y |  |
| 8 | Are case statements properly set up and contain breaks? | Y |  |
| 9 | Does the default case give an error if not reached? | Y |  |
|  | Defensive Programming | **Y, N, NA** | **Comments** |
| 1 | Do processes occur in the right order throughout the program? | Y |  |
| 2 | Has unit testing been done to ensure functions and methods provide the correct solutions? | Y | Unit tests were conducted throughout the entire implementation process using PyUnit. |
| 3 | Has the functions/methods been made modular such that further expansions are easier? | Y | Code was implemented with future expansions in mind. |
| 4 | Are there any unused functions or methods? | N |  |
| 5 | Do methods/functions contain appropriate error catching capabilities? | Y |  |
| 6 | Are the error messages direct and easy to understand? | Y | They are direct and are in laymen terms. |
| 7 | Does the correct form get forefront attention? | Y |  |
| 8 | Is the correct data being operated upon in each statement? | Y | Fully tested in unit testing. |
|  | Additional | **Y, N, NA** | **Comments** |
| 1 | Does the Python 3 properly construct the animation according to the design? | Y | Python 3 utilizes built in libraries for graphics generation. |
| 2 | Does the code ensure that if the user makes their own organic molecule, that it is indeed only up to a pentadecane molecule? | Y |  |
| 3 | Does Python 3 properly generate the layout for the animation? | Y |  |
| 4 | Does the animation follow the process in exact accordance to the customers' models? | Y |  |
| 5 | After the user watches the animation and wishes to go back to first window, does the animation window close properly? | Y |  |
| 6 | If the user chooses to enter in the name of the constructed molecule, does the program appropriately inform the user if they are correct or incorrect? | Y |  |
| 7 | If the user chooses to enter in the name of the constructed molecule and does so incorrectly, does the program appropriately inform them of their mistake and how to correct it? | Y |  |
| 8 | Is there code that will inform the user when additional updates or requirements have been added? | N | Not available in current functionality. |
| 9 | Is there code that will allow the user to leave messages for the software engineers/developers? | N | Not available in current functionality. |