# Simulator Requirement Specification

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|---|---|
| Department Name | Mechanical |
| Class | S.Y. B.Tech |
| Semester | I st Sem |
| Subject Name | Thermal Science. |
| Experiment No. | 1 |
| Experiment Name | Experiment on Carbon Residue Apparatus. |

## Version History

| Sr. No. | Version Number | Created By | Approved By | Date |
|---|---|---|---|---|
| 1 | v1.0 | Akash Salunkhe | Mr. Rohit Ghulanavar | 12/10/2020 |
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Detailed Requirement Specification

| Req. ID | Visual Entity Required | Requirement Description | Comments |
|---|---|---|---|
| REQ1 | Block in front of text 'Weight of empty Bulb :' | It should show the Weight of empty bulb which is $W_1$ inside that block. (10.910 gms ) | $W_1$ is fixed. |
| REQ2 | An empty block in front of text 'Engine Oil: ' | When clicked on this empty block it will show 4 different types of engine oils. User has to select one of these oils and this selected oil will appear in that block. | When user selects the oil, it will show the oil in the bulb (placed on weighing machine) which was previously empty. |
| REQ3 | Button- 'CLEAR' | It should clear the inserted choice of oil. | - |
| REQ3 | Block in front of text 'Weight of the bulb with 5 ml of oil:' | When user selects the oil, weighing machine will show the weight of the bulb with oil and this weight $W_2$ will appear in this block. | $W_2$ is different for different oils. |
| REQ4 | Button -'RUN' | It should pick up the bulb with oil and place it in furnace, wait for 7 seconds, pick up the bulb with evaporated oil (black carbon residue will be inside now instead of oil) and place it on weighing machine. | When bulb is placed in the furnace, oil will burn out and carbon residue will remain inside. When it is in furnace it will show smoke coming out of the bulb. |
| REQ6 | Block in front of text 'Weight of the bulb with carbon residue :' | When the bulb returns from the furnace and is placed on the weighing machine the weight of the bulb with carbon residue $A_1$ should be displayed on the display on weighing machine and should be displayed in this block. | $A_1$ is different for different oils. |
| REQ7 | Block in front of the text '*% carbon* | User will enter the calculated % of carbon residue inside the block. | It is different for different oils. |

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| | $residue = \frac{A}{W} \ X \ 100 \ \% \ by \ weight$ ' | If entered value is correct then it will show message 'CORRECT', if not 'PLEASE TRY AGAIN' | |
| REQ8 | Button 'CHECK' | It will check whether the value entered by the user is correct. | Value should be correct up to 2 decimal places at least. |
| REQ9 | Button 'RESET' | It will reset the entire screen for repeating experiment. | It will reset the screen as it was when we arrived on the simulator page. |

Please see the attached documents with the mail for more information.