| Use Case ID | 01 | |
| --- | --- | --- |
| Use Case | Balance the chemistry equation | |
| Goal | User able to balance chemistry equation | |
| Preconditions | Users have to fill up Reactants and products | |
| Success End Condition | Users successfully balanced chemistry equation | |
| Failed End Condition | Users can’t successfully balance chemistry equation | |
| Primary Actors | Chemist , Pharmacist | |
| Secondary Actors | Teacher , Student | |
| Trigger | Click on Equation Balance Button. | |
| Main Success Flow | Step | Action |
| 1 | In left side user click on Equation Balance |
| 2 | Provide Reactants and Products input |
| 3 | System checks the input valid or notl |
| 4 | System finds that symbols(input) is valid |
| 5 | System successfully provides the balanced equations |
| Alternative Flows | Step | Branching Action |
|  | 3A | System finds that symbols is not valid, and information are wrong |
| 3B | System doesn’t provide the balanced equations.  Display Error message |

Use Case Description of balance chemistry equation

| Use Case ID | 02 | |
| --- | --- | --- |
| Use Case | User can see his/her chemistry equation balance history. | |
| Goal | User able to see his/her chemistry equation balance history. | |
| Preconditions | Users should successfully do some previous balance equation. | |
| Success End Condition | Users successfully see his/her chemistry equation balance history. | |
| Failed End Condition | Users can’t successfully see his/her chemistry equation balance history. | |
| Primary Actors | Chemist , Pharmacist | |
| Secondary Actors | Teacher , Student | |
| Trigger | Click on history button on chemistry equation section. | |
| Main Success Flow | Step | Action |
| 1 | User click the Equations balance side bar. |
| 2 | User then click the History button. |
| 3 | System successfully provides all of the previous balanced equations. |
| Alternative Flows | Step | Branching Action |
|  | 3A | System doesn’t provide any of the previous balanced equations because there is no previous balance equation. |

Use Case Description of see chemistry equation balance history

| Use Case ID | 03 | |
| --- | --- | --- |
| Use Case | Get Concentration | |
| Goal | User able to determine Concentration of compound | |
| Preconditions | Users have to fill up compound, compound mass, volume of solution; when check format is morality or molality or both, Equivalent number(when check format is normality). | |
| Success End Condition | Users successfully able to determine Concentration of compound | |
| Failed End Condition | Users can’t successfully able to determine Concentration of compound | |
| Primary Actors | Chemist , Pharmacist | |
| Secondary Actors | Teacher , Student | |
| Trigger | Click on Get concentration | |
| Main Success Flow | Step | Action |
| 1 | In left side user click on Get concentration |
| 2 | User Enter the Compound name |
| 3 | User Enter the Compound mass |
| 4 | User Enter the volume of solution |
| 5 | User Enter the Equivalent number |
| 6 | User check format Molarity |
| 7 | User then click the Get concentration Button |
| 8 | System provide concentration in Molarity format |
| Alternative Flows | Step | Branching Action |
|  | 6A | User check format Molality |
| 8A | System provide concentration in Molality Format |
| 6B | User check format Normality |
| 8B | System provide concentration in Normality Format |

Use Case Description of determine Concentration of compound

| Use Case ID | 04 | |
| --- | --- | --- |
| Use Case | Get Electron Config and view atomic symbol details. | |
| Goal | User able to view any atomic symbol details | |
| Preconditions | Users should have given any valid atomic symbol | |
| Success End Condition | Users successfully view given atomic symbol details such as Atomic Name, Atomic Number, Atomic Mass, Electron Config | |
| Failed End Condition | Users can’t successfully balance chemistry equation | |
| Primary Actors | Chemist , Pharmacist | |
| Secondary Actors | Teacher , Student | |
| Trigger | Click on Get config Button | |
| Main Success Flow | Step | Action |
| 1 | User click the Electron Config side bar |
| 2 | User gives valid Atomic Symbol |
| 3 | System checks the valid symbol |
| 4 | System finds that symbols is valid |
| 5 | System successfully provides atomic symbol details |
| Alternative Flows | Step | Branching Action |
|  | 2A | User doesn’t give valid Atomic Symbol |
| 5A | System does not provide any information about atomic symbol |

Use Case Description of Electron Config

| Use Case ID | 05 | |
| --- | --- | --- |
| Use Case | User can get molar mass | |
| Goal | User able to view the molar mass | |
| Preconditions | Users should have given compound value. | |
| Success End Condition | Users successfully get the molar mass of provided compound. | |
| Failed End Condition | Users can’t successfully get molar mass. | |
| Primary Actors | Chemist , Pharmacist | |
| Secondary Actors | Teacher , Student | |
| Trigger | Click on Get config Button | |
| Main Success Flow | Step | Action |
| 1 | User click the Molar mass side bar |
| 2 | User gives valid Compound |
| 3 | System checks the valid symbol(compond) |
| 4 | System finds that symbols is valid |
| 5 | System successfully provides the Molar mass |
| Alternative Flows | Step | Branching Action |
|  | 2A | User doesn’t provide any valid compound |
| 5A | System does not provide any information about Molar mass. |

Use case description of get molar mass.

| Use Case ID | 06 | |
| --- | --- | --- |
| Use Case | User can get Percent of completion | |
| Goal | User able to view the percent of completion | |
| Preconditions | Users should have given compound value. | |
| Success End Condition | Users successfully get the percent of completion  of provided compound. | |
| Failed End Condition | Users can’t successfully get percent of completion | |
| Primary Actors | Chemist , Pharmacist | |
| Secondary Actors | Teacher , Student | |
| Trigger | Click on Get config Button | |
| Main Success Flow | Step | Action |
| 1 | User click the Percent of completion |
| 2 | User gives valid Compound |
| 3 | System checks the valid symbol(compond) |
| 4 | System finds that symbols is valid |
| 5 | System successfully provides the percent of completion |
| Alternative Flows | Step | Branching Action |
|  | 2A | User doesn’t provide any valid compound |
| 5A | System does not provide any information about percent of completion. |

Use Case Description of Percent of completion

| Use Case ID | 07 | |
| --- | --- | --- |
| Use Case | User can get the unknown value of titration | |
| Goal | User able to view the Unknown value of titration | |
| Preconditions | Users have to provide molarity of acid, molarity of base, volume of aci, volume of acid, number of moles of acid and number of moles of base. | |
| Success End Condition | Users successfully get the unknown value | |
| Failed End Condition | Users can’t successfully get the unknown value | |
| Primary Actors | Chemist , Pharmacist | |
| Secondary Actors | Teacher , Student | |
| Trigger | Click on Get config Button | |
| Main Success Flow | Step | Action |
| 1 | User click the Titration on side bar |
| 2 | User provide molarity of acid, molarity of base, volume of aci, volume of acid, number of moles of acid and number of moles of base. |
| 3 | System checks the valid input. |
| 4 | System finds that input is valid |
| 5 | System successfully provides the all necessary input. |
| Alternative Flows | Step | Branching Action |
|  | 2A | User doesn’t provide any valid input |
| 5A | System does not provide any information about Titration unknown value. |

Use case description of titration.