*Use Case 1*

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| **Test ID** | Successful Input of User Credentials |
| **Category** | Evaluation of user credentials stored on text file |
| **Requirements Coverage** | UC1-Valid-User-Credentials |
| **Input Data** | User Credentials |
| **Initial Condition** | System has been started and runs |
| **Procedure** | *1. The user runs system*  *2. The user submits username*  *3. The user submits password*  *4. The user successfully logs-in into the system and prompted on what to do next* |
| **Expected Outcome** | User able to proceed to the UI Screen |
| **Notes** |  |

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| **Test ID** | Unsuccessful Input of User Credentials |
| **Category** | Evaluation of user credentials stored on text file |
| **Requirements Coverage** | UC1-Invalid-User-Credentials |
| **Input Data** | User Credentials |
| **Initial Condition** | System has been started and runs |
| **Procedure** | *1. The user runs system*  *2. The user submits username*  *3 The user submits password*  *4. User gets incorrect username/password message with the number of tries they have left (overall have 5 tries)*  *5. After steps 2-4 repeated 5 times, system closes* |
| **Expected Outcome** | User able to proceed to the UI Screen |
| **Notes** |  |

Use Case 2

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| **Test ID** | Selection of Different Types of Analysis |
| **Category** | Display of Analysis |
| **Requirements Coverage** | UC2-Display-Of-Different-Analysis |
| **Input Data** | Selection of available country, valid analysis |
| **Initial Condition** | User has inputted valid credentials  User has selected a country to analyze |
| **Procedure** | 1.User opens the drop down menu  2.User selects analysis type that is different from the current type |
| **Expected Outcome** | Data regarding type of analysis selected by user is shown on UI Window  Viewer list for the analysis type is emptied |
| **Notes** | If this is the first instance of selecting an analysis type in the program lifetime, then it is treated as selecting a different type of analysis (different from null selected). |

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| **Test ID** | Selection of Same Analysis |
| **Category** | Display of Analysis |
| **Requirements Coverage** | UC2-Selection-Of-Same-Analysis |
| **Input Data** | Selection of available country, same analysis |
| **Initial Condition** | User successfully logged into system  User has selected a country to analyze  User has an analysis type selected |
| **Procedure** | 1.User opens the drop down menu  2.User selects same type of analysis previously selected resulting in nothing changing |
| **Expected Outcome** | Same data regarding type of analysis selected by user remains on display on UI Window |
| **Notes** | Any other notes you may want to add for this test case, which are also reflected in the requirements specification (*e.g. the user should provide only alphanumeric user names and passwords without any special characters*) |

Use Case 3

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| **Test ID** | Selection of Country with Available Data |
| **Category** | Evaluation of Country-Analysis compatibility. Display of data |
| **Requirements Coverage** | UC3-Country-With-Available-Data |
| **Input Data** | Selection of available Country |
| **Initial Condition** | User successfully logged into system |
| **Procedure** | 1.User opens country drop down menu  2.User selects country that has available data  3.Data fetching can proceed |
| **Expected Outcome** | Data regarding type of country selected by user shown on UI Window |
| **Notes** |  |

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| **Test ID** | Selection of Country without Data |
| **Category** | Evaluation of Country-Analysis compatibility. Display of Data |
| **Requirements Coverage** | UC3-Country-Without-Data |
| **Input Data** | Selection of available country |
| **Initial Condition** | User successfully logged into system |
| **Procedure** | 1.User opens country drop down menu  2.User selects country that doesn’t have available data |
| **Expected Outcome** | Error message displayed telling user that data isn’t available for selected country, ask to choose new country |
| **Notes** |  |

Use Case 4

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| **Test ID** | Selection of Data Over applicable years |
| **Category** | Display of data within time frame |
| **Requirements Coverage** | UC4-Years-With-Data |
| **Input Data** | Selection valid range of years |
| **Initial Condition** | User has inputted valid login credentials  User has selected a country and an analysis type |
| **Procedure** | 1.User selects year range that they want data to be displayed  2.Data fetching can proceed |
| **Expected Outcome** | Data regarding the year range selected by user shown on UI Window |
| **Notes** |  |

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| **Test ID** | Selection of Invalid Range of Years |
| **Category** | Display of Data within time frame |
| **Requirements Coverage** | UC4-Invalid-Range-Of-Years |
| **Input Data** | Selection of invalid range of years |
| **Initial Condition** | User successfully logged into system |
| **Procedure** | 1.User selects invalid range of years (Ex: 1966 to 1964)  2.Error message displayed telling user to input new range of years |
| **Expected Outcome** | Error message displayed |
| **Notes** |  |

Use Case 5

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| **Test ID** | Compatible viewer selected and added |
| **Category** | Display of data (Viewers) |
| **Requirements Coverage** | UC5-Compatible-Viewer-Added |
| **Input Data** | Selection of valid viewer |
| **Initial Condition** | User has inputted valid login credentials  User has selected a country  User has selected an analysis type  User has selected range of years |
| **Procedure** | 1.User opens dropdown menu and chooses a viewer that is compatible with the currently selected analysis type  2.User clicks (+) button |
| **Expected Outcome** | The viewer displays the analyzed data to the screen |
| **Notes** | Only compatible viewers can be added |

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| **Test ID** | Incompatible viewer selected and added |
| **Category** | Display of data (Viewers) |
| **Requirements Coverage** | UC5-Incompatible-Viewer-Added |
| **Input Data** | Selection of invalid viewer |
| **Initial Condition** | User has inputted valid login credentials  User has selected a country  User has selected an analysis type  User has selected range of years |
| **Procedure** | 1.User opens dropdown menu and chooses a viewer that is incompatible with the currently selected analysis type  2.User clicks (+) button |
| **Expected Outcome** | The system sends an error message to the user |
| **Notes** |  |

Use Case 6

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| **Test ID** | Viewer in viewer list removed |
| **Category** | Display of data (Viewers) |
| **Requirements Coverage** | UC6 - Removing visualization graphs from display |
| **Input Data** | Selection of viewer to remove |
| **Initial Condition** | User has inputted valid login credentials  User has selected a country  User has selected an analysis type  User has selected range of years  User has added a viewer to the display |
| **Procedure** | 1.User opens dropdown menu and chooses a viewer that is currently being displayed  2.User clicks (-) button |
| **Expected Outcome** | The viewer is removed from the display |
| **Notes** | Any other notes you may want to add for this test case, which are also reflected in the requirements specification (*e.g. the user should provide only alphanumeric user names and passwords without any special characters*) |

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| **Test ID** | Viewer not in viewer list removed |
| **Category** | Display of data (Viewers) |
| **Requirements Coverage** | UC6 - Removing visualization graphs from display |
| **Input Data** | Selection of viewer |
| **Initial Condition** | User has inputted valid login credentials  User has selected a country  User has selected an analysis type  User has selected range of years |
| **Procedure** | 1.User opens dropdown menu and chooses a viewer that is not currently being displayed  2.User clicks (-) button |
| **Expected Outcome** | A error message is displayed to the user saying the selected viewer is not currently being displayed |
| **Notes** |  |

Use Case 7

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| **Test ID** | Performing of Analysis with available data |
| **Category** | Analysis of Data |
| **Requirements Coverage** | UC7-Analysis-With-Available-Data |
| **Input Data** | Selection of analysis |
| **Initial Condition** | User inputted valid credentials, user selected country, type of analysis, years and viewers |
| **Procedure** | 1.User successfully logged in  2.User selects valid country, type of analysis, years and viewers  3.User presses recalculate button  4.Algorithm initiated corresponding to type of analysis  5.Results are displayed |
| **Expected Outcome** | All Data Shown on UI Window |
| **Notes** | Any other notes you may want to add for this test case, which are also reflected in the requirements specification (*e.g. the user should provide only alphanumeric user names and passwords without any special characters*) |

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| **Test ID** | Performing of Analysis with unavailable data |
| **Category** | Analysis of Data |
| **Requirements Coverage** | UC7-Analysis-With-Unavailable-Data |
| **Input Data** | Selection of analysis |
| **Initial Condition** | User inputted valid credentials, user selected country, type of analysis, years and viewers |
| **Procedure** | 1.User successfully logged in  2.User selects valid country, type of analysis, years and viewers  3.User presses recalculate button  4.Algorithm initiated corresponding to type of analysis  5.Message displayed to user indicating analysis not possible, tells user which category is invalid (between country, type of analysis, years or viewer) |
| **Expected Outcome** | Error Message telling user to retry |
| **Notes** |  |

Use Case 8

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| **Test ID** | Displays of analysis with one series of data |
| **Category** | Display of Data |
| **Requirements Coverage** | UC8-Analysis-With-One-Series-Of-Data |
| **Input Data** | Selection of analysis |
| **Initial Condition** | -User inputted valid credentials  -User selected country, type of analysis, years and viewers  -Data is available for user’s information |
| **Procedure** | 1.User successfully logged in  2.User selects valid country, type of analysis, years and viewers  3.User presses recalculate button  4.Algorithm initiated corresponding to type of analysis  5.Analysis with one series of data is produced |
| **Expected Outcome** | One series of data shown on UI Window |
| **Notes** | Any other notes you may want to add for this test case, which are also reflected in the requirements specification (*e.g. the user should provide only alphanumeric user names and passwords without any special characters*) |

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| **Test ID** | Displays of analysis with two series of data |
| **Category** | Display of Data |
| **Requirements Coverage** | UC8-Analysis-With-Two-Series-Of-Data |
| **Input Data** | Selection of analysis |
| **Initial Condition** | -User inputted valid credentials  -User selected country, type of analysis, years and viewers  -Data is available for user’s information |
| **Procedure** | 1.User successfully logged in  2.User selects valid country, type of analysis, years and viewers  3.User presses recalculate button  4.Algorithm initiated corresponding to type of analysis  5.Analysis with two series of data is produced |
| **Expected Outcome** | Two series of data shown on UI Window |
| **Notes** | Any other notes you may want to add for this test case, which are also reflected in the requirements specification (*e.g. the user should provide only alphanumeric user names and passwords without any special characters*) |