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| **Test Case**  **Project Name:** Pandemic Tracker | |
| **Test Case ID:** TEST-WS-001-1 | **Test Designed by:** Máté Hekfusz |
| **Test Priority:** High | **Test Designed date:** 8 May 2020 |
| **Module Name:** Retrieve data, Scrape data, Request HTTP | **Test Executed by:** A developer |
| **Test Title:** General Webscraping Validation Test – Expected Flow | **Test Execution date:** 8 May 2020 |
| **Description:** This test case will test for requirement compliance and proper operation for the four Scrapers in the program.  **Objective:** The objective of this test is to ensure that the database can call all of the webscrapers, which then execute without error and return their respective dataframes for database insertion in the proper format. | | |  |
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| **Pre-conditions:** The Database class is able to call the scrapers. The tester’s machine is connected to the Internet. | |
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| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
| 1 | Database calls mass update function | Function call | Scrapers execute | Scrapers execute | Pass |  |
| 2 | Print and inspect returns | Filled dataframes | The dataframes are complete and correspond to up-to-date data | The dataframes are complete and correspond to up-to-date data | Pass |  |
| 3 | Call mass update again | None | Scrapers all return None as the data is already up-to-date | Scrapers all return None as the data is already up-to-date | Pass |  |
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| Post-conditions: At the end of the test case, the tester should see four filled-out, properly merged and formatted dataframes which can then be moved into the database automatically. |

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| **Test Case**  **Project Name:** Pandemic Tracker | |
| **Test Case ID:** TEST-WS-001-2 | **Test Designed by:** Máté Hekfusz |
| **Test Priority:** High | **Test Designed date:** 8 May 2020 |
| **Module Name:**  Retrieve data, Scrape data, Request HTTP | **Test Executed by:** A developer |
| **Test Title:** General Webscraping Validation Test – Alt Flow | **Test Execution date:** 8 May 2020 |
| **Description:** This test case will test for requirement compliance and proper operation for the four Scrapers in the program.  **Objective:** The objective of this test is to ensure that the scrapers handle execution errors (related to loss of connectivity or wrong data formatting) properly. | | |  |
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| **Pre-conditions:** The Database class is able to call the scrapers. The tester’s machine is connected to the Internet but can be disconnected any time. | |
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| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
| 1 | Database calls mass update function without internet | Function call | Scrapers return None | Scrapers return None | Pass |  |
| 2 | Call mass update again, then disconnect partway through | Function call | Scrapers return None after disconnection | Crash with connection error | Fail | The scraper assumes continuous connection |
| 3 | Change target page in any of the scrapers, then call it again | None, filled dataframes | The changed scraper returns None, the rest return filled dataframes | The changed scraper crashes | Fail |  |
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| Post-conditions: At the end of the test case, the tester should see no change in the existing database. The update function can be run again after expected conditions are restored to ensure that nothing was corrupted. |

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| **Test Case**  **Project Name:** Pandemic Tracker | |
| **Test Case ID:** TEST-WS-100-1 | **Test Designed by:** Máté Hekfusz |
| **Test Priority:** High | **Test Designed date:** 9 May 2020 |
| **Module Name:**  Retrieve data, Scrape data, Request HTTP | **Test Executed by:** A developer |
| **Test Title:** StatsScraper Validation Test – Expected Flow | **Test Execution date:** 9 May 2020 |
| **Description:** This test case will test for requirement compliance and proper operation for the StatsScraper which gets country-level case data from Johns Hopkins.  **Objective:** The objective of this test is to ensure that the scraper does its function correctly.  Specifically, it fulfils these requirements:   * Connects to the most recent Johns Hopkins dataset * Scrapes confirmed cases, deaths, and recoveries for every country and stores them in a dataframe * Aggregates these three statistics to get the global numbers * Returns all data | | |  |
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| **Pre-conditions:** The tester’s machine is connected to the Internet. | |
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| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
| 1 | Call StatsScraper | Function call | StatsScraper begins scraping JH data | StatsScraper begins scraping JH data | Pass |  |
| 2 | Monitor execution | None | StatsScraper does an exhaustive scrape and merges accordingly | StatsScraper does an exhaustive scrape and merges accordingly | Pass |  |
| 3 | Confirm returned data matches requirements | Filled dataframe, three integers | StatsScraper returns the dataframe with countries, as well as the global case data | StatsScraper returns the dataframe with countries, as well as the global case data | Pass |  |
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| Post-conditions: At the end of the test case, the tester has updated, well-formatted case data to pass to any other function—mainly the database. |

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| **Test Case**  **Project Name:** Pandemic Tracker | |
| **Test Case ID:** TEST-WS-100-2 | **Test Designed by:** Máté Hekfusz |
| **Test Priority:** High | **Test Designed date:** 9 May 2020 |
| **Module Name:**  Retrieve data, Scrape data, Request HTTP | **Test Executed by:** A developer |
| **Test Title:** StatsScraper Validation Test – Alt Flow | **Test Execution date:** 9 May 2020 |
| **Description:** This test case will test for requirement compliance and proper operation in various edge cases for the StatsScraper which gets country-level case data from Johns Hopkins.  **Objective:** The objective of this test is to ensure that the scraper handles various errors well. These errors include trying to scrape updated data without Johns Hopkins updating their dataset first and the parameters of the dataset changing. | | |  |
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| **Pre-conditions:** The tester’s machine is connected to the Internet. Johns Hopkins has not uploaded yesterday’s case data (which the program will seek) yet. The tester has a version of the dataset that has a different number of rows than the official one. | |
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| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
| 1 | Call StatsScraper | Function call | StatsScraper doesn’t find the data and returns None | StatsScraper crashes with an index error | Fail | The scraper assumes that JH always has the most recent data |
| 2 | Call StatsScraper on the tester’s dataset | Function call | StatsScraper correctly determines the parameters of the data and scrapes properly | StatsScraper correctly determines the parameters of the data and scrapes properly | Pass |  |
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| Post-conditions: At the end of the test case, nothing changes in the database. |

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| **Test Case**  **Project Name:** Pandemic Tracker | |
| **Test Case ID:** TEST-WS-200-1 | **Test Designed by:** Máté Hekfusz |
| **Test Priority:** High | **Test Designed date:** 9 May 2020 |
| **Module Name:**  Retrieve data, Scrape data, Request HTTP | **Test Executed by:** A developer |
| **Test Title:**  TravelScraper Validation Test – Expected Flow | **Test Execution date:** 9 May 2020 |
| **Description:** This test case will test for requirement compliance and proper operation for the TravelScraper which gets country-level travel restrictions from Wikipedia.  **Objective:** The objective of this test is to ensure that the scraper does its function correctly.  Specifically, it fulfils these requirements:   * Connects to the Wikipedia collection of restrictions * Scrapes each country and its restriction, if any, properly * Removes links, references, and other non-text data from each entry * Returns a dataframe with all the data | | |  |
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| **Pre-conditions:** The tester’s machine is connected to the Internet. | |
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| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
| 1 | Call TravelScraper | Function call | TravelScraper begins scraping Wikipedia entries | TravelScraper begins scraping Wikipedia entries | Pass |  |
| 2 | Monitor execution | None | TravelScraper does an exhaustive scrape and only stores the text | TravelScraper does an exhaustive scrape and merges accordingly | Pass |  |
| 3 | Confirm returned data matches requirements | Filled dataframe | TravelScraper returns the dataframe with countries | TravelScraper returns the dataframe with countries | Pass |  |
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| Post-conditions: At the end of the test case, the tester has updated, well-formatted travel data to pass to any other function—mainly the database. |

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| **Test Case**  **Project Name:** Pandemic Tracker | |
| **Test Case ID:** TEST-WS-200-2 | **Test Designed by:** Máté Hekfusz |
| **Test Priority:** High | **Test Designed date:** 9 May 2020 |
| **Module Name:**  Retrieve data, Scrape data, Request HTTP | **Test Executed by:** A developer |
| **Test Title:**  TravelScraper Validation Test – Alt Flow | **Test Execution date:** 9 May 2020 |
| **Description:** This test case will test for requirement compliance and proper operation in various edge cases for the TravelScraper which gets country-level travel restrictions from Wikipedia.  **Objective:** The objective of this test is to ensure that the scraper can smartly figure out the parameters of the scraping and update them accordingly when encountering changed data. | | |  |
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| **Pre-conditions:** The tester’s machine is connected to the Internet. The Wikipedia article has added or removed at least one entry since the last scraping. | |
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| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
| 1 | Call TravelScraper | Function call | TravelScraper correctly determines the parameters of the data and scrapes properly | TravelScraper correctly determines the parameters of the data and scrapes properly | Pass |  |
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| Post-conditions: At the end of the test case, nothing changes in the database. |

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| **Test Case**  **Project Name:** Pandemic Tracker | |
| **Test Case ID:** TEST-WS-300-1 | **Test Designed by:** Máté Hekfusz |
| **Test Priority:** High | **Test Designed date:** 9 May 2020 |
| **Module Name:**  Retrieve data, Scrape data, Request HTTP | **Test Executed by:** A developer |
| **Test Title:**  HealthcareScraper Validation Test – Expected Flow | **Test Execution date:** 9 May 2020 |
| **Description:** This test case will test for requirement compliance and proper operation for the HealthcareScraper which gets the number of beds and doctors per 1000 people for each country from data aggregator IndexMundi.  **Objective:** The objective of this test is to ensure that the scraper does its function correctly.  Specifically, it fulfils these requirements:   * Connects to two separate IndexMundi databases * Scrapes the number of beds and doctors correctly * Merges the two dataframes into one and returns it | | |  |
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| **Pre-conditions:** The tester’s machine is connected to the Internet. | |
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| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
| 1 | Call HealthcareScraper | Function call | HealthcareScraper begins scraping the IndexMundi datasets | HealthcareScraper begins scraping the IndexMundi datasets | Pass |  |
| 2 | Monitor execution | None | HealthcareScraper first scrapes the beds, then the doctors before merging both | HealthcareScraper first scrapes the beds, then the doctors before merging both | Pass |  |
| 3 | Confirm returned data matches requirements | Filled dataframe | HealthcareScraper returns the dataframe with countries | HealthcareScraper returns the dataframe with countries | Pass |  |
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| Post-conditions: At the end of the test case, the tester has updated, well-formatted healthcare data to pass to any other function—mainly the database. |

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| **Test Case**  **Project Name:** Pandemic Tracker | |
| **Test Case ID:** TEST-WS-300-2 | **Test Designed by:** Máté Hekfusz |
| **Test Priority:** High | **Test Designed date:** 9 May 2020 |
| **Module Name:**  Retrieve data, Scrape data, Request HTTP | **Test Executed by:** A developer |
| **Test Title:** HealthcareScraper Validation Test – Alt Flow | **Test Execution date:** 9 May 2020 |
| **Description:** This test case will test for requirement compliance and proper operation in various edge cases for the HealthcareScraper which gets the number of beds and doctors per 1000 people for each country from data aggregator IndexMundi.  **Objective:** The objective of this test is to ensure that the scraper can smartly figure out the parameters of the scraping and update them accordingly when encountering changed data. | | |  |
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| **Pre-conditions:** The tester’s machine is connected to the Internet. One or both of the databases have added or removed at least one entry since the last scraping. | |
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| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
| 1 | Call HealthcareScraper | Function call | HealthcareScraper correctly determines the parameters of the data and scrapes properly | HealthcareScraper correctly determines the parameters of the data and scrapes properly | Pass |  |
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| Post-conditions: At the end of the test case, nothing changes in the database. |