# Lab 03: Black Box Test Plan

## Test Overview

There are 15 System-level Black Box tests for the PackScheduler project. They have been updated for the SortedList functionality of Lab 3.  
  
To run the tests:

1. Right click on the StudentDirectoryPanel class in the package explorer.

2. Select Run As > Java Application.

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| **Test ID** | **Description** | **Expected Results** | **Actual Results** |
| Test 1: Opening the Program | Preconditions: None  1. Run StudentDirectoryPanel.  2. Check Results.  3. Close GUI. | StudentDirectoryPanel opens. The window has buttons for a New Student Directory, Load Student Directory, Save Student Directory, Add Student, and Remove Student. Text boxes for student details are shown below. The Student Directory section is empty. | **StudentDirectoryPanel opens. The window has buttons for a New Student Directory, Load Student Directory, Save Student Directory, Add Student, and Remove Student. Text boxes for student details are shown below. The Student Directory section is empty.** |
| Test 2:  Invalid First Name  Equivalence class: First Name can’t be null, so try making it null | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: * Last name: Gavin * ID: 200245432 * Email: gggavin@ncsu.edu * Password: gaviniscool7 (will appear as just dots) * Repeat Password: gaviniscool7 * Max Credits: 18   3. Click Add Student  4. Check Results  5. Close GUI | A dialog pop-up appears that says “Invalid first name” | **A dialog pop-up appears that says “Invalid first name”** |
| Test 3: Invalid Last Name  Equivalence class: Last Name can’t be null, so try making it null | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Gavin * Last name: * ID: 200245432 * Email: [gggavin@ncsu.edu](mailto:gggavin@ncsu.edu) * Password: gaviniscool7 (will appear as just dots) * Repeat Password: gaviniscool7 * Max Credits: 18   3. Click Add Student  4. Check Results  5. Close GUI | A dialog pop-up appears that says “Invalid last name” | **A dialog pop-up appears that says “Invalid last name”** |
| Test 4:  Invalid ID  Equivalence class: ID can’t be null, so try making it null | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Gavin * Last name: Gavin * ID: * Email: [gggavin@ncsu.edu](mailto:gggavin@ncsu.edu) * Password: gaviniscool7 (will appear as just dots) * Repeat Password: gaviniscool7 * Max Credits: 18   3. Click Add Student  4. Check Results  5. Close GUI | A dialog pop-up appears that says “Invalid ID” | **A dialog pop-up appears that says “Invalid ID”** |
| Test 5:  Null Email  Equivalence class: Email can’t be null, so try making it null | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Gavin * Last name: Gavin * ID: 200245432 * Email: * Password: gaviniscool7 (will appear as just dots) * Repeat Password: gaviniscool7 * Max Credits: 18   3. Click Add Student  4. Check Results  5. Close GUI | A dialog pop-up appears that says “Invalid email” | **A dialog pop-up appears that says “Invalid email”** |
| Test 6: Email without @  Equivalence class: Email has to have an @ symbol, so try without one | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Gavin * Last name: Gavin * ID: 200245432 * Email: gggavin * Password: gaviniscool7 (will appear as just dots) * Repeat Password: gaviniscool7 * Max Credits: 18   3. Click Add Student  4. Check Results  5. Close GUI | A dialog pop-up appears that says “Invalid email” | **A dialog pop-up appears that says “Invalid email”** |
| Test 7: Email without .  Equivalence class: Email has to have a period, so try without one | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Gavin * Last name: Gavin * ID: 200245432 * Email: gggavin@ncsu * Password: gaviniscool7 (will appear as just dots) * Repeat Password: gaviniscool7 * Max Credits: 18   3. Click Add Student  4. Check Results  5. Close GUI | A dialog pop-up appears that says “Invalid email” | **A dialog pop-up appears that says “Invalid email”** |
| Test 8: Email with Last . Before @  Equivalence Class: the last period in the email has to come after the @ sign, so try putting it before | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Gavin * Last name: Gavin * ID: 200245432 * Email: gggavin.ncsu@edu * Password: gaviniscool7 (will appear as just dots) * Repeat Password: gaviniscool7 * Max Credits: 18   3. Click Add Student  4. Check Results  5. Close GUI | A dialog pop-up appears that says “Invalid email” | **A dialog pop-up appears that says “Invalid email”** |
| Test 9: Invalid password  Equivalence class: password can’t be null, so try making it null | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Gavin * Last name: Gavin * ID: 200245432 * Email: gggavin@ncsu.edu * Password: * Repeat Password: * Max Credits: 18   3. Click Add Student  4. Check Results  5. Close GUI | A dialogue pop-up appears that says “Invalid password” | **A dialogue pop-up appears that says “Invalid password”** |
| Test 10: Non-matching Password  Equivalence class: Passwords must match, so try making them different | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Gavin * Last name: Gavin * ID: 200245432 * Email: gggavin@ncsu.edu * Password: gaviniscool7 (will appear as just dots) * Repeat Password: gaviniscool6 * Max Credits: 18   3. Click Add Student  4. Check Results  5. Close GUI | A dialogue pop-up appears that says “Passwords do not match” | **A dialogue pop-up appears that says “Passwords do not match”** |
| Test 11: Max Credits below 3  Boundary value analysis: Max credits have to be between 3 and 18; try below 3 | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Gavin * Last name: Gavin * ID: 200245432 * Email: gggavin@ncsu.edu * Password: gaviniscool7 (will appear as just dots) * Repeat Password: gaviniscool7 * Max Credits: 2   3. Click Add Student  4. Check Results  5. Close GUI | A dialogue pop-up appears, that says “Invalid max credits” | **A dialogue pop-up appears, that says “Invalid max credits”** |
| Test 12: Max Credits Above 18  Boundary Value analysis: Max Credits have to be between 3 and 18; try above 18 | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Gavin * Last name: Gavin * ID: 200245432 * Email: gggavin@ncsu.edu * Password: gaviniscool7 (will appear as just dots) * Repeat Password: gaviniscool7 * Max Credits: 20   3. Click Add Student  4. Check Results  5. Close GUI | A dialogue pop-up appears that says “Invalid max credits” | **A dialogue pop-up appears that says “Invalid max credits”** |
| Test 13: Valid Student  Equivalence class: Try making everything proper and ensuring it goes through | Preconditions: Test 1 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Gavin * Last name: Gavin * ID: 200245432 * Email: gggavin@ncsu.edu * Password: gaviniscool7 (will appear as just dots) * Repeat Password: gaviniscool7 * Max Credits: 18   3. Click Add Student  4. Check Results  5. Close GUI | The student directory box shows the following:   * First Name: Gavin * Last Name: Gavin * Student ID: 200245432 | **The student directory box shows the following:**   * **First Name: Gavin** * **Last Name: Gavin** * **Student ID: 200245432** |
| Test 14: Duplicate Student  Equivalence class:  Students aren’t supposed to share IDs, so try making two students with the same ID | Preconditions: Test 13 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Jonathan * Last name: Frakes * ID: 200245433 * Email: jmfrakes@ncsu.edu * Password: Complete4Fabrication! (will appear as just dots) * Repeat Password: Complete4Fabrication! * Max Credits: 18   3. Click Add Student  4. Check Results  5. Close GUI | A pop-up dialogue appears that says “Student already in system” | **A pop-up dialogue appears that says “Student already in system”** |
| Test 15: Many Valid Students  Equivalence class:  Try adding many valid students, to see if any conflicts arise | Preconditions: Test 13 Passes  1. Run StudentDirectoryPanel  2. Type the following into the Student Controls text boxes:   * First name: Jonathan * Last name: Frakes * ID: 200245433 * Email: jmfrakes@ncsu.edu * Password: Complete4Fabrication! (will appear as just dots) * Repeat Password: Complete4Fabrication! * Max Credits: 18   3. Click Add Student  4. Type the following into the Student Controls text boxes:   * First name: Lucina * Last name: Yllise * ID: 200245762 * Email: leyllise@ncsu.edu * Password: Time2ChangeFate (will appear as just dots) * Repeat Password: Time2ChangeFate * Max Credits: 15   5. Click Add Student  6. Type the following into the Student Controls text boxes:   * First name: Hideo * Last name: Kojima * ID: 200214112 * Email: hkojima@ncsu.edu * Password: KeptUW8ingHuh? (will appear as just dots) * Repeat Password: KeptUW8ingHuh? * Max Credits: 18   7. Check Results  8. Close GUI | The student directory box shows the following:   * Row 1   + First Name: Jonathan   + Last Name: Frakes   + Student ID: 200245433 * Row 2   + First Name: Gavin   + Last Name: Gavin   + Student ID: 200245432 * Row 3   + First Name: Hideo   + First Name: Kojima   + Student ID: 200214112 * Row 4   + First Name: Lucina   + Last Name: Yllise   + Student ID: 200245762 | **The student directory box shows the following:**   * **Row 1**   + **First Name: Jonathan**   + **Last Name: Frakes**   + **Student ID: 200245433** * **Row 2**   + **First Name: Gavin**   + **Last Name: Gavin**   + **Student ID: 200245432** * **Row 3**   + **First Name: Hideo**   + **First Name: Kojima**   + **Student ID: 200214112** * **Row 4**   + **First Name: Lucina**   + **Last Name: Yllise**   + **Student ID: 200245762** |
| Test 16: Remove Student  Equivalence class:  Students are supposed to be removable, so try removing a student | Preconditions: Test 13 and Test 15 pass  1. Click on the first row of the Student Directory list (Jonathan Frakes 200245433)  2. Click Remove Student  3. Check Results  4. Close GUI | The student directory box shows the following:   * Row 1   + First Name: Gavin   + Last Name: Gavin   + Student ID: 200245432 * Row 2   + First Name: Hideo   + First Name: Kojima   + Student ID: 200214112 * Row 3   + First Name: Lucina   + Last Name: Yllise   + Student ID: 200245762 | **The student directory box shows the following:**   * **Row 1**   + **First Name: Gavin**   + **Last Name: Gavin**   + **Student ID: 200245432** * **Row 2**   + **First Name: Hideo**   + **First Name: Kojima**   + **Student ID: 200214112** * **Row 3**   + **First Name: Lucina**   + **Last Name: Yllise**   + **Student ID: 200245762** |
| Test 17: Save Student Directory  Equivalence class: Student Directory should be able to be saved to a file, so try saving one to a file | Preconditions: Test 13 and Test 15-16 pass  1. Click on Save Student Directory  2. In the FileChooser that appears, navigate to the test-files directory  3. Name the file “BBTP\_Results.txt”  4. Check results  5. Close GUI | The contents of BBTP\_Results.txt are as follows:   * Gavin,Gavin,200245432,gggavin@ncsu.edu,#òË#AeÚ?É]èÜT›ÙSEmîG#ÎïJÔ£}¬’/t€,18 * Hideo,Kojima,200214112,hkojima@ncsu.edu,æ'#?Û\_7P'ka:E„zR`T¼Jì.Ñˆt‘#0”Zô,18 * Lucina,Yllise,200245762,leyllise@ncsu.edu,‘½Æ;#ikG+¨3?–\Ô/+†9A&z÷‰7€#Ý:?y[,15 | **The contents of BBTP\_Results.txt are as follows:**   * **Gavin,Gavin,200245432,gggavin@ncsu.edu,#òË#AeÚ?É]èÜT›ÙSEmîG#ÎïJÔ£}¬’/t€,18** * **Hideo,Kojima,200214112,**[**hkojima@ncsu.edu**](mailto:hkojima@ncsu.edu)**,æ'#?Û\_7P'ka:E„zR`T¼Jì.Ñˆt‘#0”Zô,18** * **Lucina,Yllise,200245762,leyllise@ncsu.edu,‘½Æ;#ikG+¨3?–\Ô/+†9A&z÷‰7€#Ý:?y[,15** |
| Test 18: New Student Directory  Equivalence class: Directory should be resetable, so try resetting it | Preconditions: Test 13 and Test 15-17 pass  1. Click on New Student Directory  2. Check Results  3. Close GUI | The Student Directory box becomes empty | **The Student Directory box becomes empty** |
| Test 19: Load Student Directory  Equivalence class: Student Directories should be able to be loaded from a file, so try loading one from a file | Preconditions: Test 13 and Test 15-18 pass  1. Click on Load Student Directory  2. In the FileChooser dialogue, navigate to test-files.  3. Open BBTP\_Results.txt  4. Check results  5. Close GUI | The student directory box shows the following:   * Row 1   + First Name: Gavin   + Last Name: Gavin   + Student ID: 200245432 * Row 2   + First Name: Hideo   + First Name: Kojima   + Student ID: 200214112 * Row 3   + First Name: Lucina   + Last Name: Yllise   + Student ID: 200245762 | **The student directory box shows the following:**   * **Row 1**   + **First Name: Gavin**   + **Last Name: Gavin**   + **Student ID: 200245432** * **Row 2**   + **First Name: Hideo**   + **First Name: Kojima**   + **Student ID: 200214112** * **Row 3**   + **First Name: Lucina**   + **Last Name: Yllise**   + **Student ID: 200245762** |