

7 – Developmental Testing

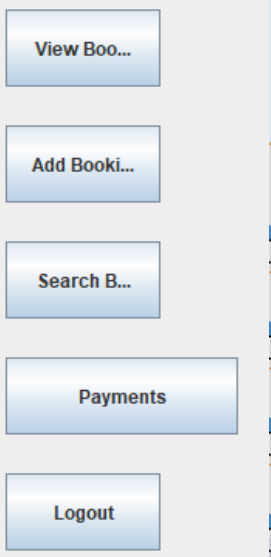
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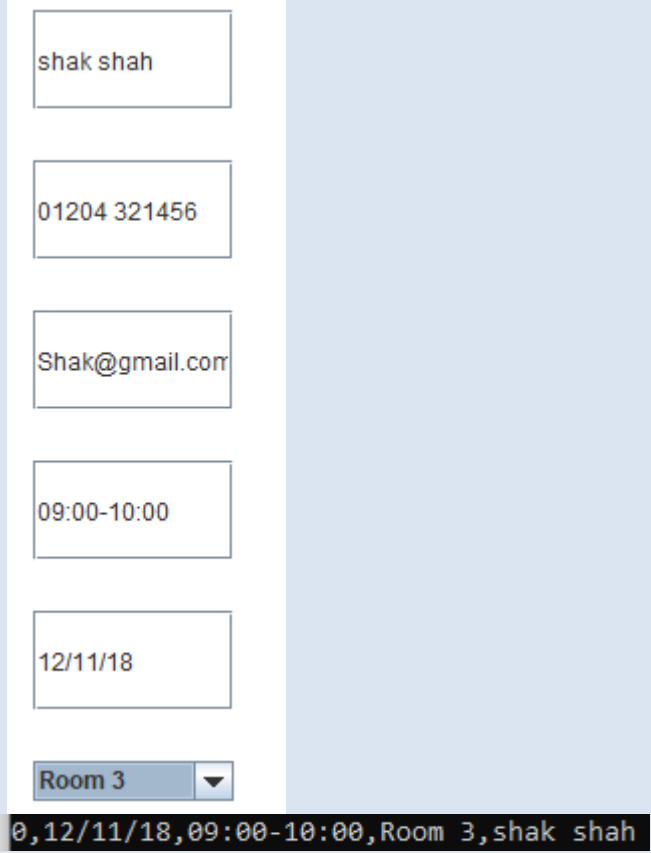
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7.1 Objective Summary

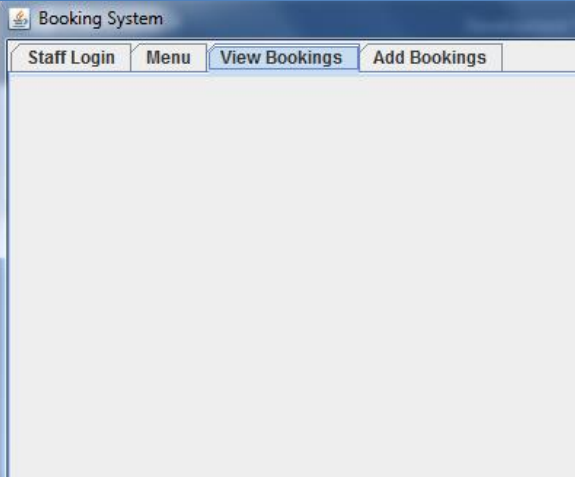
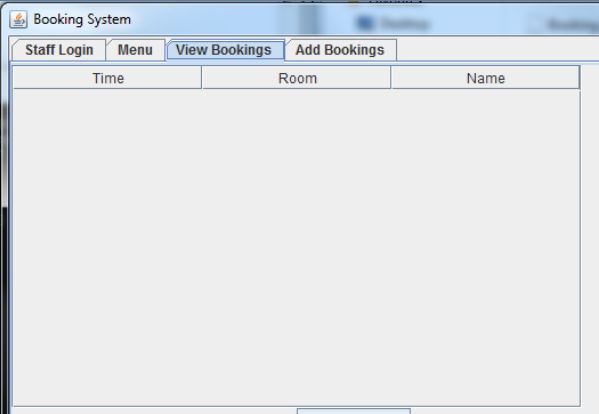
Objective #	Objective Description
1	Security – verify staff logins
2	Read from a text file – staff logins
3	Security - Verify customer logins
4	Read from a text file – customer logins
5	Read from a text file – booking file
6	View bookings – display array data into a table
7	Sort/Filter bookings by date
8	Sort/Filter bookings by name
9	Add bookings to the list
10	Write to a file – booking database
11	Write to a file – customer info
12	Write to a file – payments database
13	Calculations to decide price
14	Delete bookings from the database
15	Search for a booking by name
16	Search for a booking by date
17	Search for a booking by booking ID

7.2 Developmental Tests

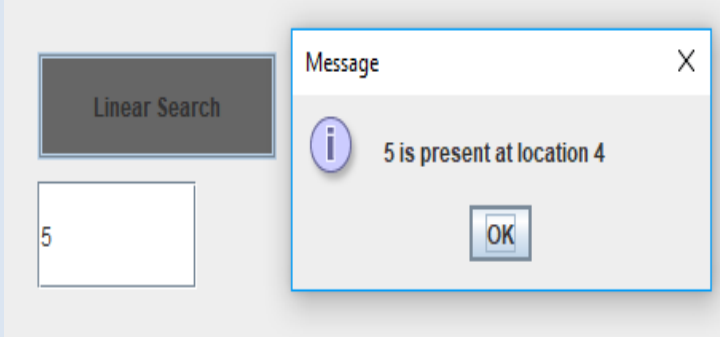
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Prototype	<p>To test the functionality of my menu, I navigated through the system to see if each button on my menu would switch to its intended page. When each button was pressed a message would be displayed to the command line on what page it moved to as well as change the index of the page on the actual system, which it did effectively.</p> <p>To ensure this was done effectively I created constants at the start of my program and set the indexes to them, which if the position of a page changed, I could change the index of the page with little problems.</p>	 <pre> Correct username and password You have logged in Moved to Booking Page Running clearbookingtable Running populatebookingtable Moved to Home Moved to Add Bookings Page Moved to Home Moved to search Bookings Page Moved to Home Moved to Payments Page Moved to Home You have logged out </pre> <pre> final int LOGINPAGE = 0; final int HOMEPAGE=1; final int BOOKINGPAGE=2; final int ADDBOOKINGPAGE=3; final int SEARCHBOOKINGPAGE=4; final int PAYMENTSPAGE=5; </pre>	-	-

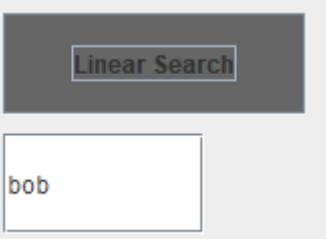
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Prototype	<p>Once I had created all the necessary inputs on my 'add bookings' screen I entered some test data to check that once the confirm button was pressed the data I had entered would be obtained correctly. To show it worked successfully, I made it display on the command line.</p> <p>at this point the Booking ID is not auto assigned therefore it will assign it as zero for now.</p>	 <p>The screenshot shows a booking form with the following fields and values:</p> <ul style="list-style-type: none"> Name: shak shah Phone: 01204 321456 Email: Shak@gmail.com Time: 09:00-10:00 Date: 12/11/18 Room: Room 3 (selected from a dropdown menu) <p>At the bottom of the form, the command line output is displayed: 0,12/11/18,09:00-10:00,Room 3,shak shah</p>	-	-


Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Prototype	<p>Once all the data was being correctly obtained from the inputs, I created a method to add this data to an array to be stored to a text file. The data from the input would be first passed into the 'addBookingList' method using a temporary object of the booking class to do so. Once this is done the 'WriteToBookingFile' is run using a loop to cycle through each index of the array and each time store the record of data to the file.</p>	<pre> Running addToList 0,12/11/18,10:00-11:00,Room 4,Shak Shah Running writeListToFile public void writeToBookingFile() { System.out.println("Running writeListToFile"); try { FileWriter fw = new FileWriter(itemFileName); BufferedWriter bw = new BufferedWriter(fw); for(int i = 0; i < nextItemLocation; i++) { String currentData = bookingsArray[i].toString(); bw.write(currentData); bw.newLine(); } bw.close(); } catch(Exception e) { System.out.println("Error writing to file: " + e); } } public void addToBookingList(Booking passedItem) { System.out.println("Running addToList"); bookingsArray[nextItemLocation] = passedItem; nextItemLocation++; System.out.println(passedItem); } </pre>	-	-

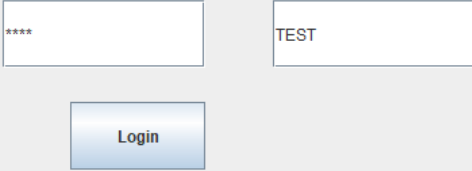
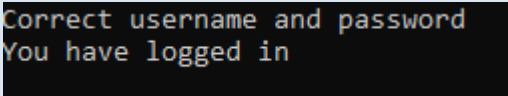
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Prototype	<p>Whilst developing the code for the creation of my table, each time I would run the program my table would not display. This therefore wouldn't allow the table for my page to be created, leaving it blank.</p>	 <p>The screenshot shows a window titled 'Booking System' with a menu bar containing 'Staff Login', 'Menu', 'View Bookings', and 'Add Bookings'. The 'View Bookings' tab is selected, and the main area below it is completely blank.</p>	<p>After testing a few solutions by isolating certain methods, I later realised that I had not called the method to create the table, once I had it then worked.</p>	 <p>The screenshot shows the same 'Booking System' window. The table is now visible with three columns: 'Time', 'Room', and 'Name'. The 'View Bookings' tab remains selected.</p>

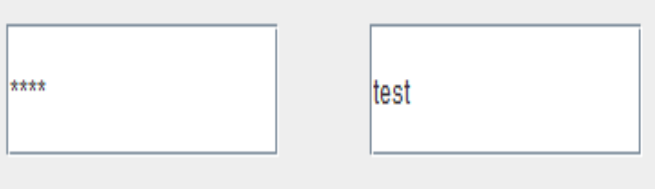
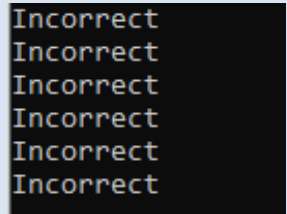
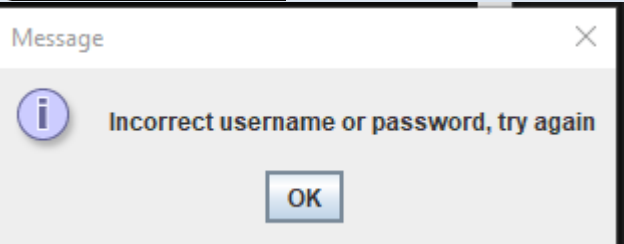
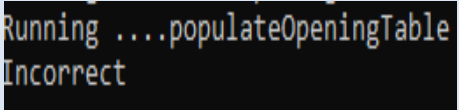
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)																																																																								
Prototype	<p>To populate the table, I had to use the text file which held the information for the bookings which were to be stored in the table. This data would then be used to display the table with the correct data inside of it, which would correctly run when I clicked on this page. This would work by reading each line in the text file and splitting the data where a comma was found and storing the attributes into a temporary array of data. Each index of the temporary array would then be stored into the actual booking array correlating the index to the correct attribute, all being stored under an object to be passed into the add to booking list method.</p>	<div><div><div>Booking System</div><div><div>Staff Login</div><div>Menu</div><div>View Bookings</div><div>Add Bookings</div><div>Search Bookings</div></div><table><thead><tr><th>Date</th><th>Time</th><th>Room</th><th>Name</th></tr></thead><tbody><tr><td>01/09/2018</td><td>12:12</td><td>4</td><td>Irwin</td></tr><tr><td>02/09/2018</td><td>15:27</td><td>2</td><td>Nevins</td></tr><tr><td>11/10/2018</td><td>12:53</td><td>5</td><td>Boote</td></tr><tr><td>11/10/2018</td><td>15:38</td><td>1</td><td>Chane</td></tr><tr><td>24/09/2018</td><td>14:09</td><td>3</td><td>Andrus</td></tr><tr><td>07/11/2018</td><td>19:06</td><td>5</td><td>Coop</td></tr><tr><td>02/09/2018</td><td>14:40</td><td>1</td><td>Binky</td></tr><tr><td>10/09/2018</td><td>12:40</td><td>3</td><td>Peder</td></tr><tr><td>06/09/2018</td><td>18:59</td><td>2</td><td>Stephen</td></tr><tr><td>09/09/2018</td><td>15:28</td><td>5</td><td>Raddy</td></tr><tr><td>12/11/2018</td><td>19:19</td><td>5</td><td>Olenolin</td></tr><tr><td>06/09/2018</td><td>18:30</td><td>4</td><td>Lek</td></tr><tr><td>28/09/2018</td><td>17:37</td><td>4</td><td>Cordie</td></tr><tr><td>22/11/2018</td><td>19:03</td><td>3</td><td>Raddy</td></tr><tr><td>28/10/2018</td><td>14:46</td><td>1</td><td>Florian</td></tr><tr><td>14/10/2018</td><td>13:15</td><td>2</td><td>Craggie</td></tr><tr><td>24/11/2018</td><td>17:28</td><td>3</td><td>Carney</td></tr></tbody></table><div>Menu</div></div></div> <pre>FileReader fr = new FileReader(itemFileName); BufferedReader br = new BufferedReader(fr); String listLine = br.readLine(); while(listLine != null) { String[] bookingData = listLine.split(","); Booking tempBooking = new Booking(); tempBooking.bookingID = Integer.parseInt(bookingData[0]); tempBooking.date = bookingData[1]; tempBooking.time = bookingData[2]; tempBooking.room = bookingData[3]; tempBooking.name = bookingData[4]; addToBookingList(tempBooking); listLine = br.readLine(); }</pre>	Date	Time	Room	Name	01/09/2018	12:12	4	Irwin	02/09/2018	15:27	2	Nevins	11/10/2018	12:53	5	Boote	11/10/2018	15:38	1	Chane	24/09/2018	14:09	3	Andrus	07/11/2018	19:06	5	Coop	02/09/2018	14:40	1	Binky	10/09/2018	12:40	3	Peder	06/09/2018	18:59	2	Stephen	09/09/2018	15:28	5	Raddy	12/11/2018	19:19	5	Olenolin	06/09/2018	18:30	4	Lek	28/09/2018	17:37	4	Cordie	22/11/2018	19:03	3	Raddy	28/10/2018	14:46	1	Florian	14/10/2018	13:15	2	Craggie	24/11/2018	17:28	3	Carney	-	-
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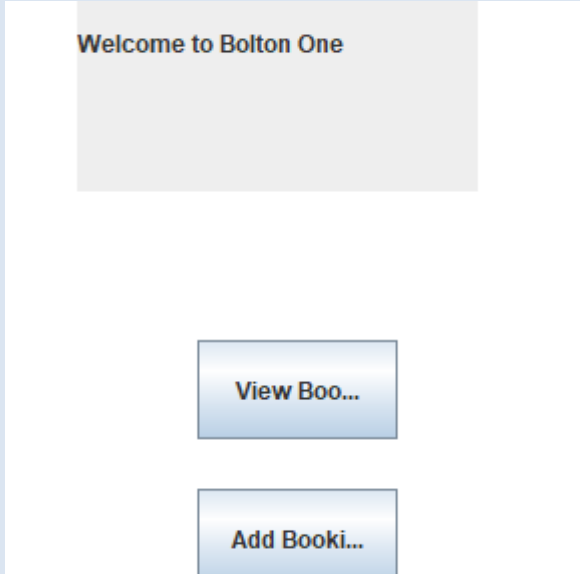

Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Prototype	<p>My linear search allows the search of a booking using the booking ID. When the correct ID of a booking is entered a pop up is displayed with a message that shows the index of the booking, with that ID.</p>	 <p>The screenshot shows a user interface for a linear search. It includes a button labeled 'Linear Search', a text input field containing the number '5', and a modal dialog box titled 'Message'. The dialog box contains an information icon, the text '5 is present at location 4', and an 'OK' button.</p>	-	-

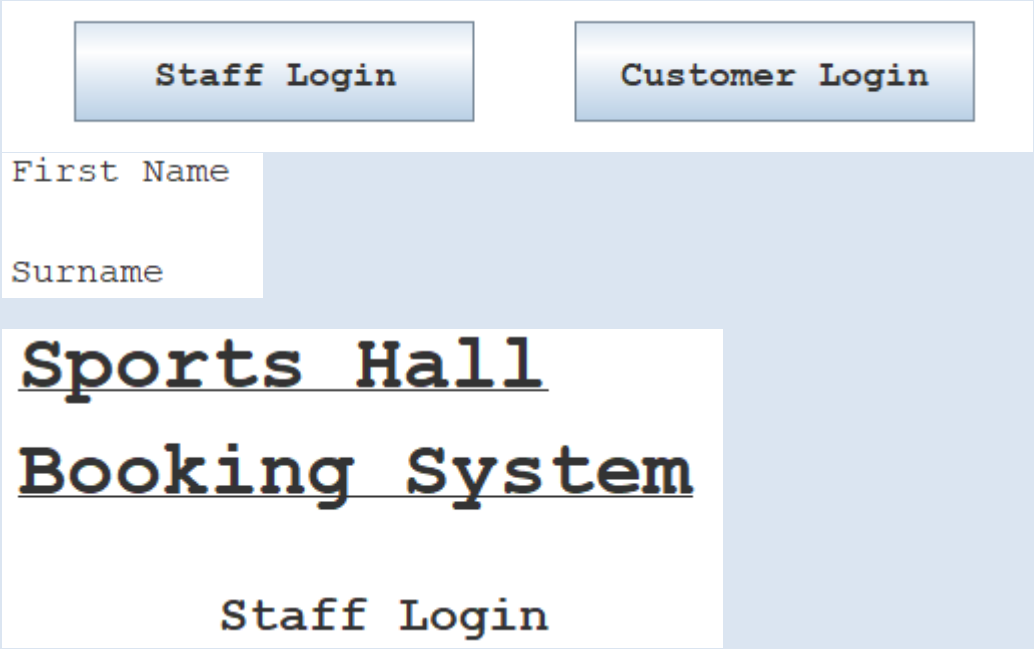
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Prototype	At this stage of development my linear search doesn't contain any validation , meaning that if any incorrect data is entered, such as a string value, the program will not do anything . This however will cause problems to the system as the linear search will try to run, but with a string value which will just cause an error message on the command line .	 	Actions made during software development stage. See page 26 for updated solution.	-

Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Prototype	Using the same approach as I did to implement a table to display booking data, I created a table displaying the opening times for the Centre successfully. This would use the same processes using methods adjusted for different arrays and text files.		-	-

Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Prototype	<p>For my login screen when I enter the correct data the system allows me to access the rest of the system and displays that I have correctly logged in. The data is checked with a stored list of usernames and passwords which it compares it too. This uses linear search to access the correct login.</p>	 		



Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Prototype	<p>If incorrect data is entered into the login, the data is compared to all values within the text file and should output an incorrect message if not found. However, this displays the error message for each comparison that is made that doesn't find the correct result. This does the same for the pop-up displays.</p>	  	<p>To correct this, I had to remove the “if statement” which made the comparisons from within the loop to outside the loop, therefore allowing comparisons to be made which would set a Boolean variable to either true or false. The “if statement” would then check for the conditions true or false to decide whether the data is correct or not. This would allow the error message to be displayed only once.</p>	 <p>Now the both outputs on command line and GUI pop-up will only appear once.</p>

Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	I changed the colour of all my backgrounds to the colour white. However, it would not cover the full screen, leaving areas covered by labels the default colour.		To correct this, I changed the labels to be see through, (by setting opaque to false) I also resized them to make them larger and easier to see.	

Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	To make my screens look more user friendly I created various fonts to be used on my labels, buttons, and tables . Along with this I made them larger and a large label to be displayed on every screen, the 'Sports hall booking system' label.	<pre>Font mainTitleFont=new Font("Courier", Font.BOLD,40); Font pageTitleFont=new Font("Courier", Font.BOLD,25); Font labelFont=new Font("Courier", Font.PLAIN,18); Font buttonFont=new Font("Courier", Font.BOLD,18); Font tableHeaderFont=new Font("Courier", Font.BOLD,25); Font tableRowsFont=new Font("Courier", Font.PLAIN,20);</pre> 		

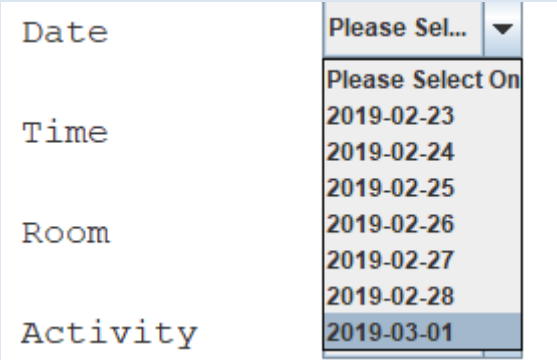
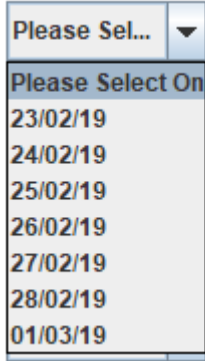
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)																																
Soft Dev	Once I had implemented the new font styles for my tables, it would make the text too big to fit into row. This would happen regardless of whether I changed the size of the table, as text would still be slightly cut off.	<table><thead><tr><th>Days</th></tr></thead><tbody><tr><td>Monday</td></tr><tr><td>Tuesday</td></tr><tr><td>Wednesday</td></tr><tr><td>Thursday</td></tr><tr><td>Friday</td></tr><tr><td>Saturday</td></tr><tr><td>Sunday</td></tr></tbody></table> <table><thead><tr><th>Time</th></tr></thead><tbody><tr><td>7am-9pm</td></tr><tr><td>7am-8pm</td></tr><tr><td>7am-8pm</td></tr><tr><td>7am-8pm</td></tr><tr><td>8am-10pm</td></tr><tr><td>7am-10pm</td></tr><tr><td>9am-6pm</td></tr></tbody></table>	Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Time	7am-9pm	7am-8pm	7am-8pm	7am-8pm	8am-10pm	7am-10pm	9am-6pm	To correct this, I had to change the size of my rows in the table. I had to first get the current size of the rows and add on suitable length to it, making it appropriate for the text size.	<div>Opening Times:</div> <table><thead><tr><th>Days</th><th>Time</th></tr></thead><tbody><tr><td>Monday</td><td>7am-9pm</td></tr><tr><td>Tuesday</td><td>7am-8pm</td></tr><tr><td>Wednesday</td><td>7am-8pm</td></tr><tr><td>Thursday</td><td>7am-8pm</td></tr><tr><td>Friday</td><td>8am-10pm</td></tr><tr><td>Saturday</td><td>7am-10pm</td></tr><tr><td>Sunday</td><td>9am-6pm</td></tr></tbody></table> <pre>openingTableHeader.setFont (tableHeaderFont) ; openingTable.setFont (tableRowsFont) ; openingTable.setRowHeight (openingTable.getRowHeight ()+15) ;</pre>	Days	Time	Monday	7am-9pm	Tuesday	7am-8pm	Wednesday	7am-8pm	Thursday	7am-8pm	Friday	8am-10pm	Saturday	7am-10pm	Sunday	9am-6pm
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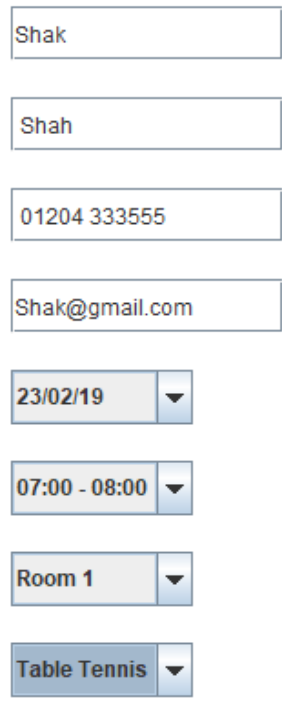
Stage	Result / Problem	Evidence			Action and Justification (If Needed)	Evidence of Action (If Needed)																							
Soft Dev	After I had readjusted the size of my booking tables and its rows the data in some columns would not be able to be shown as the data was quite long, cutting off some of the text. There was also excess space in other columns such as ID which only required space for a at max a few digits.	<table><tr><td>8</td><td>10/09/18</td><td>17:00 -...</td></tr><tr><td>9</td><td>06/09/18</td><td>16:00 -...</td></tr><tr><td colspan="3"></td></tr></table>			8	10/09/18	17:00 -...	9	06/09/18	16:00 -...				To correct this issue, I use a column model so that I would be able to set the width if each column to an appropriate size for the data being held in that column.	<table><tr><th>ID</th><th>Date</th><th>Time</th></tr><tr><td>1</td><td>01/09/18</td><td>20:00 - 21:00</td></tr><tr><td>2</td><td>02/09/18</td><td>20:00 - 21:00</td></tr><tr><td>3</td><td>11/10/18</td><td>10:00 - 11:00</td></tr></table>			ID	Date	Time	1	01/09/18	20:00 - 21:00	2	02/09/18	20:00 - 21:00	3	11/10/18	10:00 - 11:00
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<table><tr><td>Room 3</td><td>Peder</td><td>Table T...</td></tr><tr><td>Room 2</td><td>Stephen</td><td>Basketball</td></tr><tr><td colspan="3"></td></tr></table>			Room 3	Peder	Table T...	Room 2	Stephen	Basketball				<table><tr><th>Room</th><th>Name</th><th>Activity</th></tr><tr><td>Room 4</td><td>Irwin</td><td>Badminton</td></tr><tr><td>Room 2</td><td>Nevins</td><td>Tennis</td></tr><tr><td>Room 5</td><td>Boote</td><td>football</td></tr></table>			Room	Name	Activity	Room 4	Irwin	Badminton	Room 2	Nevins	Tennis	Room 5	Boote	football			
Room 3	Peder	Table T...																											
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Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	<p>Whilst trying to add logos onto my screens, although I had correctly created an image icon and added it to a label successfully the image, I used would not fit in the size I set for it.</p>		<p>To correct this, I had to adjust the pixel size of my image to match the size I had set it during my code.</p>	

Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	Once I had effectively adjusted image sizes, I included the logo on every screen along with a large title that displays on every screen along with the logo images. I had to alter the pixel size of the other image too before using it		-	-


Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	Following the refinement of my system design, I implemented changes to my 'add booking' screen by including more combo boxes for certain inputs. I also continued to use the fonts I created for the labels, buttons but also the text boxes to allow a consistent text size.	<div> <h3>Add Bookings</h3> <div> <div>First Name</div> <input type="text"/> </div> <div> <div>Surname</div> <input type="text"/> </div> <div> <div>Mobile Number</div> <input type="text"/> </div> <div> <div>Email</div> <input type="text"/> </div> <div> <div>Date</div> <div>Please Sel... ▼</div> </div> <div> <div>Time</div> <div>Please Sel... ▼</div> </div> <div> <div>Room</div> <div>Please Sel... ▼</div> </div> <div> <div>Activity</div> <div>Please Sel... ▼</div> </div> <div> <div>Confirm Booking</div> <div>Return To Menu</div> </div> </div>	-	-

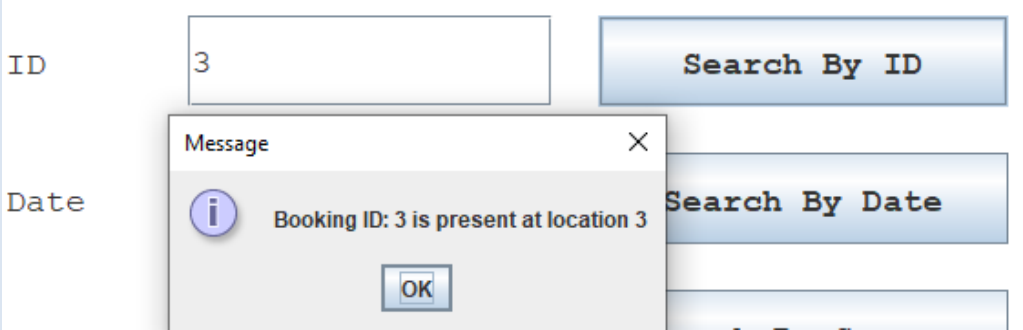
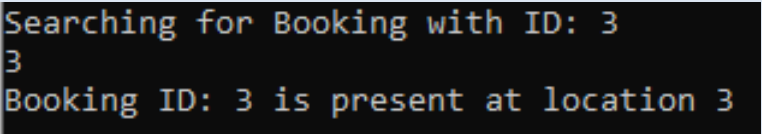
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	To allow my system to be able to make up to date bookings, I had to use the LocalDate object to get the current date. However, although it worked correctly the format in which it was displayed in was not.		To correct this, I had to use a formatter and set it to the standard “dd/mm/yy” format for my dates.	<pre>LocalDate todaysDate = LocalDate.now(); DateTimeFormatter formatter = DateTimeFormatter.ofPattern("dd/MM/yy"); String formattedTodaysDate = todaysDate.format(formatter);</pre> 

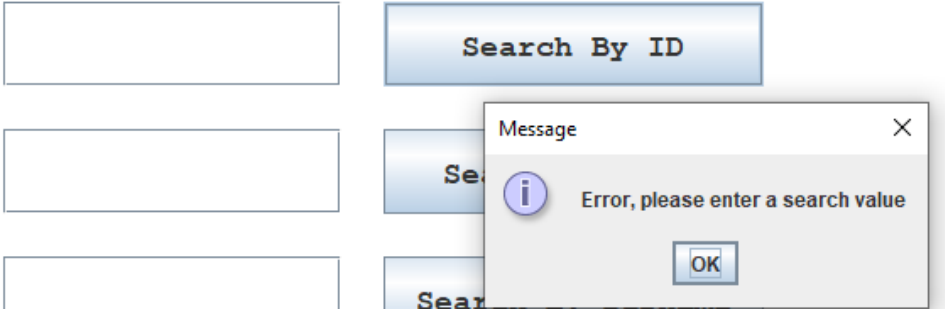
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	Due to my redesign of the 'add booking' screen I had to adjust writing to the file with the new forms of input. To do this I had to correctly obtain the data from each input and store it, under variables temporarily . The data was outputted onto the command line to show it was obtained correctly	 <p>Shak</p> <p>Shah</p> <p>01204 333555</p> <p>Shak@gmail.com</p> <p>23/02/19 ▼</p> <p>07:00 - 08:00 ▼</p> <p>Room 1 ▼</p> <p>Table Tennis ▼</p>	-	-
		23/02/19,07:00 - 08:00,Room 1,Shak Shah,Table Tennis		

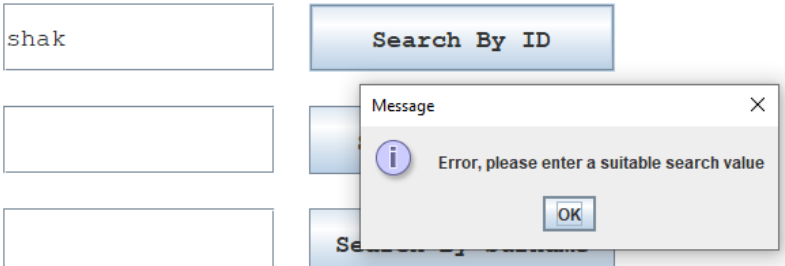
Stage	Result / Problem	Evidence		Action and Justification (If Needed)	Evidence of Action (If Needed)	
Soft Dev	When creating the screen to display the table for payments, although the table was effective in displaying the data, parts of the data were in the wrong column			To correct this, I had to change the index of the array that I was using to store data from the array into a temporary variable within my program, to allow the data obtained from the text file to correlate with its variable name.	Card Holder	Card Number
		4508935535133116	Barty Kach		Barty Kach	4508935535133116
		36985204845390	Alfreda Bisku...		Alfreda Bisku...	36985204845390
		337941358118726	Damiano O'Keevan		Damiano O'Keevan	337941358118726
		5048376486538728	Darice Albrook			

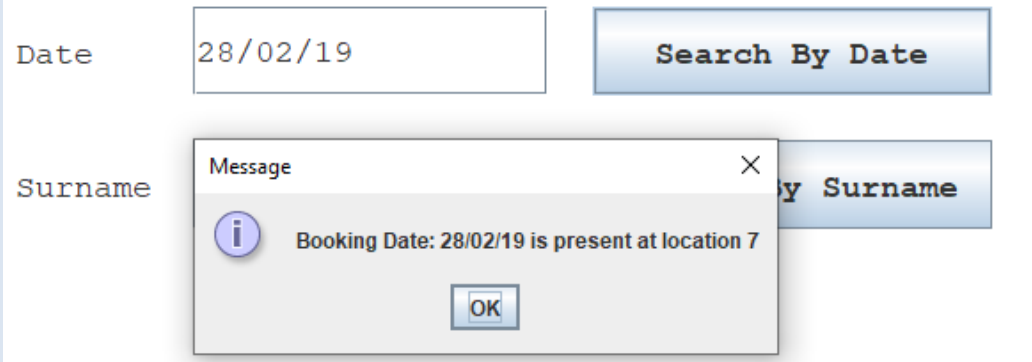
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)																																																																								
Soft Dev	<p>To create a sort on my table I decided to implement a bubble sort, ordering the data by name(alphabetically). The sort re orders the data by running the sort on the array of data rather than the actual data in the file.</p> <p>However, when I tried to change the position of the Booking IDs there was an error as I could not store the value of the Booking IDs in my temporary variable, and another saying the temporary variable could not be stored into the array.</p>		<p>To correct this, I realised that the temporary variable I was using was a String data type, therefore I had to first convert the booking ID into a String before storing it into the temporary variable, then to store that into another index of the array I had to parse the data into an integer which would allow my sort to work effectively. Once the sort worked the table was repopulated to update the table shown to the user.</p>	<div><div>By Name ▼</div><div>Filter</div><div>running bubble sort by name Running populatebookingtable</div><table><thead><tr><th>ID</th><th>Date</th><th>Time</th><th>Room</th><th>Name</th><th>Activity</th></tr></thead><tbody><tr><td>1</td><td>01/09/18</td><td>20:00 - 21:00</td><td>Room 4</td><td>Irwin</td><td>Badminton</td></tr><tr><td>2</td><td>02/09/18</td><td>20:00 - 21:00</td><td>Room 2</td><td>Nevins</td><td>Tennis</td></tr><tr><td>3</td><td>11/10/18</td><td>10:00 - 11:00</td><td>Room 5</td><td>Boote</td><td>football</td></tr><tr><td>4</td><td>11/10/18</td><td>09:00 - 10:00</td><td>Room 1</td><td>Chane</td><td>Basketball</td></tr><tr><td>5</td><td>24/09/18</td><td>12:00 - 13:00</td><td>Room 3</td><td>Andrus</td><td>Badminton</td></tr></tbody></table><table><thead><tr><th>ID</th><th>Date</th><th>Time</th><th>Room</th><th>Name</th><th>Activity</th></tr></thead><tbody><tr><td>5</td><td>24/09/18</td><td>12:00 - 13:00</td><td>Room 3</td><td>Andrus</td><td>Badminton</td></tr><tr><td>7</td><td>02/09/18</td><td>07:00 - 08:00</td><td>Room 1</td><td>Binky</td><td>Basketball</td></tr><tr><td>37</td><td>24/02/19</td><td>07:00 - 08:00</td><td>Room 1</td><td>Bob Smith</td><td>Football</td></tr><tr><td>3</td><td>11/10/18</td><td>10:00 - 11:00</td><td>Room 5</td><td>Boote</td><td>football</td></tr><tr><td>17</td><td>24/11/18</td><td>07:00 - 08:00</td><td>Room 3</td><td>Carney</td><td>Tennis</td></tr></tbody></table></div>	ID	Date	Time	Room	Name	Activity	1	01/09/18	20:00 - 21:00	Room 4	Irwin	Badminton	2	02/09/18	20:00 - 21:00	Room 2	Nevins	Tennis	3	11/10/18	10:00 - 11:00	Room 5	Boote	football	4	11/10/18	09:00 - 10:00	Room 1	Chane	Basketball	5	24/09/18	12:00 - 13:00	Room 3	Andrus	Badminton	ID	Date	Time	Room	Name	Activity	5	24/09/18	12:00 - 13:00	Room 3	Andrus	Badminton	7	02/09/18	07:00 - 08:00	Room 1	Binky	Basketball	37	24/02/19	07:00 - 08:00	Room 1	Bob Smith	Football	3	11/10/18	10:00 - 11:00	Room 5	Boote	football	17	24/11/18	07:00 - 08:00	Room 3	Carney	Tennis
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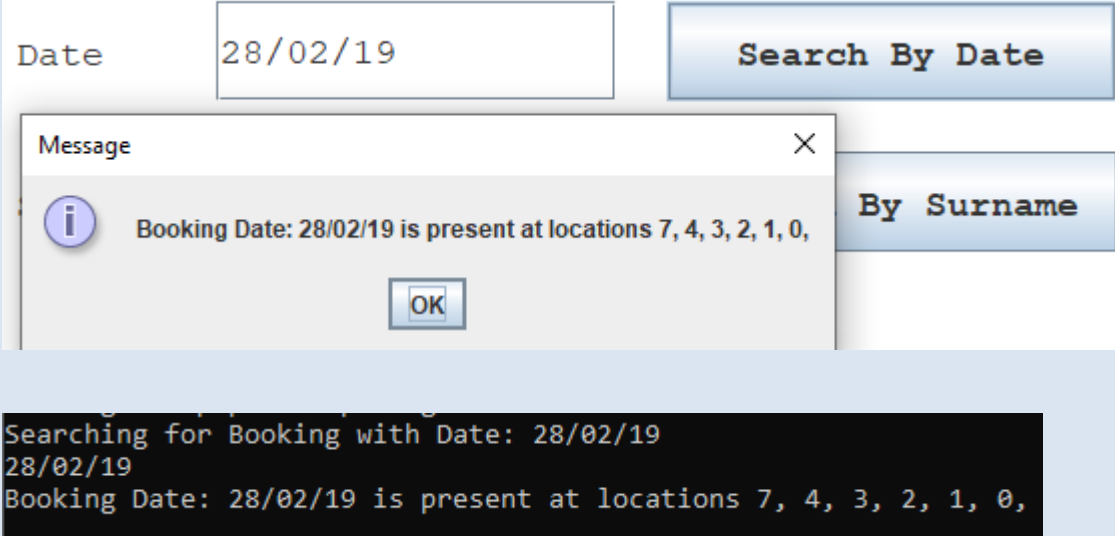
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	Again, following my re-design I implemented three searches on to my search bookings screen, each with separate inputs for each search.	 <p>The screenshot shows the 'Sports Hall Booking System' interface. At the top, there are logos for 'Bolton one', 'Bolton Council', 'NHS Bolton', and the 'University of Bolton'. Below the logos, there is a 'Return To Menu' button. Underneath, there are three search options, each with a text input field and a button: 'Search By ID', 'Search By Date', and 'Search By Surname'.</p>		

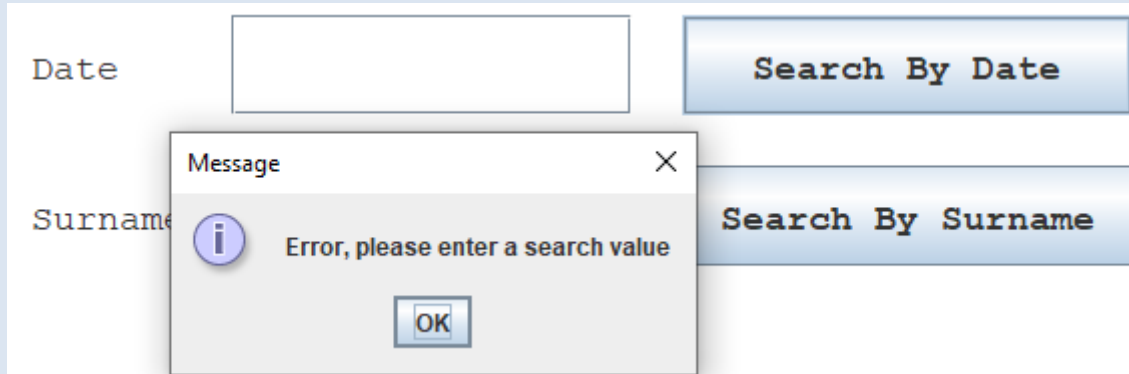
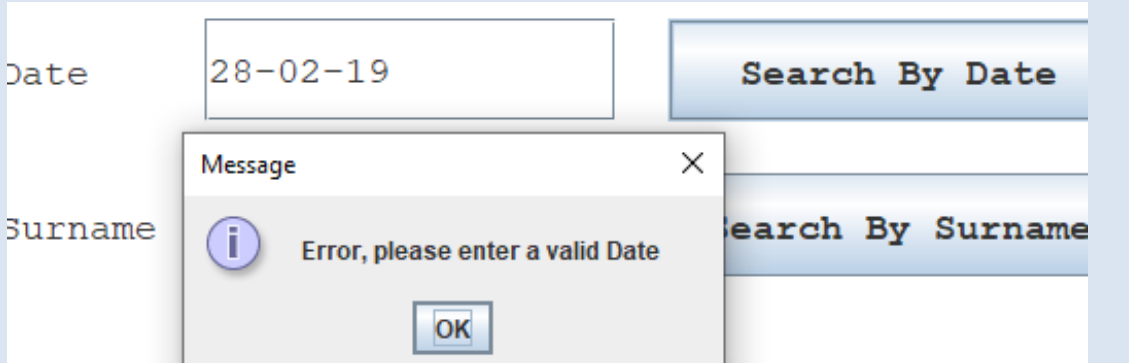
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	To test the functionality of the search by ID I entered a valid booking ID . Once the search button has been pressed, the search is run successfully , and the location is found and displayed via a pop-up window. The search performed can find the location of the booking in the array and inform the user of its index, to be found in the booking table.	 		

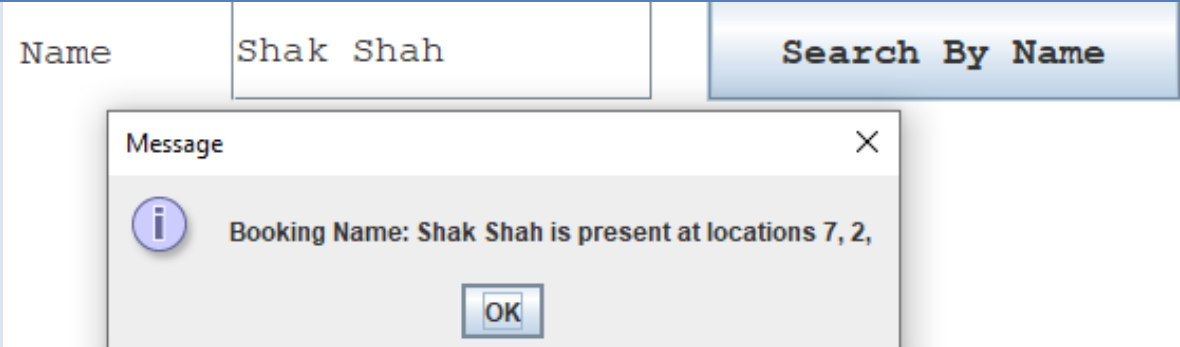
Stage	Result / Problem	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	Initial problem during prototype shown on page 9	However, for my search by ID, as it did for my prototype if I enter an incorrect value , e.g. a string, there will be an error to correct this I implemented validation techniques to prevent incorrect input. Firstly, if there is no data entered it will display a message prompting the user to enter data.	

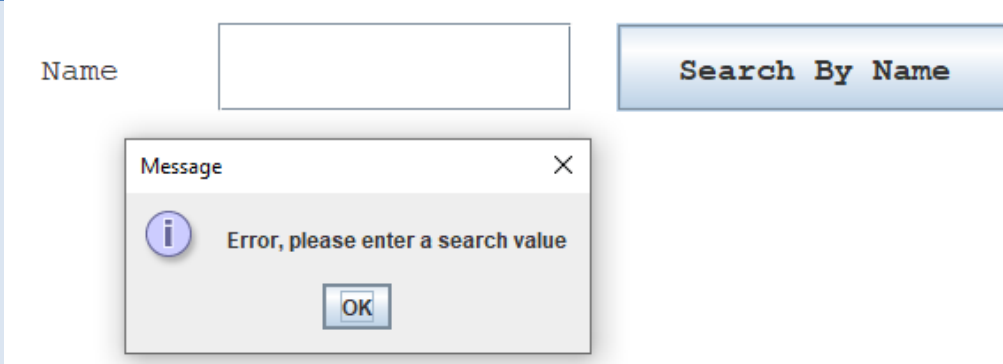
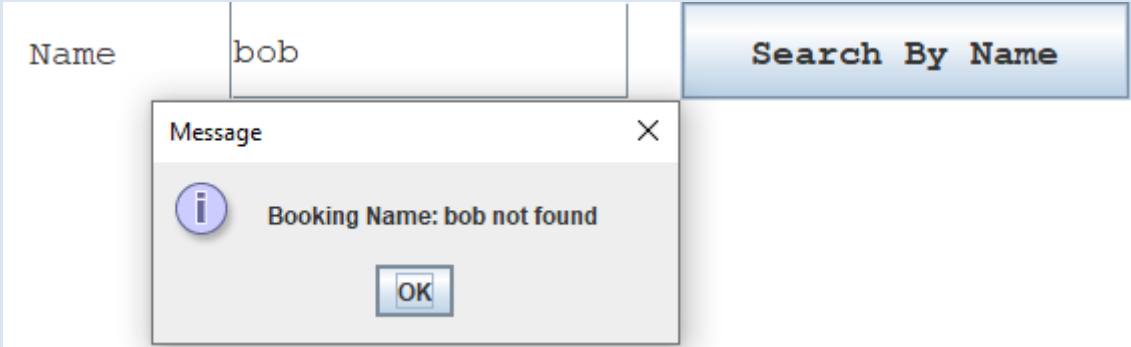
Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	<p>Secondly if the user enters a string value, I used a 'try and catch' to try and parse the user's data into an integer. If successful a Boolean value will remain true and the code will continue. However, if the data cannot be parsed into an integer (is a string) the program will 'catch' it and set the Boolean value to false prompting an error message to be displayed to the user, with an error message also on the command prompt.</p>	 <pre data-bbox="577 671 1680 1348"> java.lang.NumberFormatException: For input string: "shak" at java.base/java.lang.NumberFormatException.forInputString at java.base/java.lang.NumberFormatException.forInputString Error, please enter a suitable search value String bookingIDText = tfSearchByID.getText(); boolean integerValue = true; try { idSearchVal = Integer.parseInt(bookingIDText); } catch (NumberFormatException exc) { System.out.println("Error, please enter a search value"); exc.printStackTrace(); allTabs.setSelectedIndex(STAFFSEARCHBOOKINGPAGE); integerValue = false; } if (bookingIDText.isEmpty()==true) { System.out.println("Error, please enter a search value"); JOptionPane.showMessageDialog(null, ("Error, please enter a search value")); } else if (integerValue == false) { System.out.println("Error, please enter a suitable search value"); JOptionPane.showMessageDialog(null, ("Error, please enter a suitable search Booking ID")); } </pre>		

Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	Using my first search, I also made a search for bookings using dates. However, when entering correct data into the search, although the output was correct, I had realised that many bookings have the same date . This would mean that I would have to display each location rather than the first one that was found .		Action and evidence below	

Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	Initial problem above		As there are many bookings associated with one date, instead of storing the location of the booking as an integer, I stored the locations into a string which would add another location to the string for as many bookings found of that date.	

Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	Once I had successfully found search values for my dates search when correct data was inputted, I implemented validation to ensure it worked with incorrect data. The check would first ensure that data had been entered and then ensure the data entered was in the correct format, which includes a '/'	 		

Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	My final search is a search for a booking using the name of the booking. Using correct data, the name being searched for would result in more than one booking similarly, to the search for dates. However even though I made the search in the same way I still only got one location of a booking rather than two as shown in the booking file.		<p>To solve this, I realised I had used a 'Break' in my program during the if statement where a booking is found. This would then end the loop and prevent other bookings to be searched.</p> <p>Once I removed this the search worked effectively.</p>	

Stage	Result / Problem	Evidence	Action and Justification (If Needed)	Evidence of Action (If Needed)
Soft Dev	<p>There is also validation in this search. Like the other searches there must be data entered otherwise a pop up is displayed.</p> <p>If there is incorrect data, there will be a pop up displaying the name has not been found.</p>	 <p>The screenshot shows a search form with a label 'Name' and an empty text input field. To the right is a button labeled 'Search By Name'. A modal message box is displayed in the foreground with the title 'Message', an information icon, and the text 'Error, please enter a search value'. There is an 'OK' button at the bottom of the message box.</p>  <p>The screenshot shows the same search form, but the text input field now contains the name 'bob'. The 'Search By Name' button is still present. A modal message box is displayed with the title 'Message', an information icon, and the text 'Booking Name: bob not found'. There is an 'OK' button at the bottom of the message box.</p>		