Testing and evaluation

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## How I will I test

I am going to test my program by going from form to form and checking if all the validation works and if all the buttons do, as they should. I will format it by saying what should happen then checking if it works. If it does not work I will attempt to fix it and then re-test till it works sufficiently.

## What I will test

### frmStart

## Testing

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| frmStart | | | | | | |
| Test No | event | Test data | Reason for test | Expected outcome | outcome | screenshots |
| 1 | Form loads and the the username is retrived by the program | The users network area username in my case 112544 | If the correct username is not obtained then the system will not work | The variable user will contain my username | The variable user was set to 112544 which is my username. |  |
| 2 | Form loads and the number or each kind of record is found | The dat files | A lot of the for loops in the program rely on an accurate value for the number of each type of record. If it works for staff it will work for the other files as they are in the same. | The number of staff files recorded to be 97 as the file size is 97 times the record size and there is 97 staff | It says there is 97 staff thus it works |  |
| 3 | Form loads and the number or each kind of record is found | The dat files exept that the staff dat file will be missing | If it does not properly handle the situation it could crash the code | The program will continue as if nothing out of the ordinary was happening with nstaff as 0 | The program crashed when it got to the line of code that worked out the number of records |  |
| 3.b | Form loads and the number or each kind of record is found | The dat files exept that the staff dat file will be missing | If it does not properly handle the situation it could crash the code | The program will continue as if nothing out of the ordinary was happening with nstaff as 0 | The program set nstaff to 0 and did not crash |  |
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| Student form | | | | | | |
| Test No | Object | Test data | Reason for test | Expected outcome | outcome | screenshots |
| 1 | grdRewards | The current points of the student | The data grid is only meant to show rewards that the student can buy | The rewards show will all be of a cost less than the students points | Success |  |
| 2 | lblName | The students points | The student is only able to see what he can buy | The cost of the rewards shown will be less than the students points | Success |  |
| 3 | grdRecords | The students pointsP records | The student should be able to see all and only the ones concerning him | There will be two records 1 giving points 1 taking them away | Success |  |
| 4 | BtnPassword | N/A | Otherwise the student won’t be able to change password | 3 textboxes are to appear in a group box the text on the button will change and another will appear bellow called back | Success |  |
| 5 | btnPassword | Both new passwords but no old one | Then need to use their old password to prove its them | A msgbox will open telling them that the old password is wrong | Success |  |
| 6 | btnPassword | I will leave the new password box empty but fill the old password | They need to input a new password | A message box telling them that their password must be at least 6 characters long | Success |  |
| 7 | btnPassword | I will input the 2 new password boxes differently | They need to retype the password correctly | A message box telling them that their retype of the password does not match their initial input | Success |  |
| 8 | txtpassword | I will input the new password as only a number | The password must be alpha numeric | A message box telling them that their password must be alpha numeric | Success |  |
| 9 | btnpassword | I will put in a password that is only letters | The password must be alpha numeric | A message box telling them that their password must be alpha numeric | Success |  |
| 10 | BtnPassword | I will put in correct old password and 2 matching alphanumeric passwords in the other slots | The password must be changable | A message box telling them that their password has been changed and the password changing boxes and back btn will disappear and the text on btnpassword will revert | Success |  |
| 11 | btnBack | N/A | They must be able to stop the password changing procedure withour completeing it | the password changing boxes and back btn will disappear and the text on btnpassword will revert | Success |  |
| 12 | btnExit | N/A | The student needs to be able to exit the form | The form will close and the login form will open | Success |  |
| 13 | grdRewards | Set of pens | The student needs to be able to redeem points for rewards | A message box will open asking if the student wants to buy the reward | Success |  |
| 13b | grdRewards VByes | Set of pens | The student has to be able to redeem points | The reward will be bought and the students points will go down correspondingly from 725 to 700 | success |  |
| 13c | Grdrewards  vbNo | Set of pens | The student should be given a chance incase they miss clicked | The message box will close the reward will not be bought and the points will stay the same | success |  |

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| Staffform | | | | | | |
| Test NO | Object | Test data | Reason for test | Expected outcome | Outcome | Screen shot |
| 1 | Lblpointsleft | The member of staffs name and points | The member of staff must be able to see how many points they have left | The label will contain the name of the member of staff and how many points they have left | Success |  |
| 2 | grdPoints | The past points transfers | The member of staff must be able to see the past points transfers they have made | Grdpoints will contain the tranfers that the member of staff has made | Success |  |
| 3 | grdStudents | The student DATfile | The member of staff should be able to see the basic information about every student | The data grid will be filled with all students containing some information about them | Success |  |
| 4 | Btnsearch | The letters “an” in txtforename | The member of staff should be able to use search to search to search for students whose names begin with the text in txtsurname and txtforename | the data grid will be refreshed and will only contain students whose first name begins with an | Success |  |
| 5 | btnsearch | The letters “be” in txtSurname | The member of staff should be able to use search to search to search for students whose names begin with the text in txtsurname and txtforename | the data grid will be refreshed and will only contain students whose last name begins with “be” | Success |  |
| 6 | Btnsearch | The letters “an” in txtforename and “be” in txtsurname | The member of staff should be able to use search to search to search for students whose names begin with the text in txtsurname and txtforename | the data grid will be refreshed and will only contain students whose first name begins with “an” and the last name begins with “be | Success |  |
| 7 | btnsearch | Txtforname and txtsurname emptied | The data grid should be able to be refreshed to being full | The data grid will be filled with all the students | Success |  |
| 8 | grdstudents | A students information | A member of staff should be able to see the past point transfers of a student | The studentrecordsform should open containing the past points transfers of the student | Success |  |
| 9 | BtnPassword | N/A | Otherwise the student won’t be able to change password | 3 textboxes are to appear in a group box the text on the button will change and another will appear bellow called back | Success |  |
| 10 | btnPassword | Both new passwords but no old one | Then need to use their old password to prove its them | A msgbox will open telling them that the old password is wrong | Success |  |
| 11 | btnPassword | I will leave the new password box empty but fill the old password | They need to input a new password | A message box telling them that their password must be at least 6 characters long | Success |  |
| 12 | btnPassword | I will input the 2 new password boxes differently | They need to retype the password correctly | A message box telling them that their retype of the password does not match their initial input | Success |  |
| 13 | txtpassword | I will input the new password as only a number | The password must be alpha numeric | A message box telling them that their password must be alpha numeric | Success |  |
| 14 | btnpassword | I will put in a password that is only letters | The password must be alpha numeric | A message box telling them that their password must be alpha numeric | Success |  |
| 15 | BtnPassword | I will put in correct old password and 2 matching alphanumeric passwords in the other slots | The password must be changeable | A message box telling them that their password has been changed and the password changing boxes and back btn will disappear and the text on btnpassword will revert | Success |  |
| 16 | btnBack | N/A | They must be able to stop the password changing procedure with our completing it | the password changing boxes and back btn will disappear and the text on btnpassword will revert | Success |  |
| 17a | btnAdmin | An admin | Only the admin should be able to get onto the admin forms | There to be an admin button | Success |  |
| 17b | btnadmin | A non admin | Only the admin should be able to get onto the admin forms | There will be just a space where the admin button is for admin | Success |  |
| 18 | btnPoints | N/A | The member of staff must be able to give points to a student | The points data grid will become invisible and all of the different points transfer text boxes labels and the back button will appear | Success |  |
| 19 | btnpoints | 10 in txtpoints and good behaviour in txt reason and chkgive checked but no studID | The student id text box must not be empty since you cant give points to no one | A message box will appear saying that the student id must be a number | Success |  |
| 20 | btnpoints | 113150 in txtstudent and good behaviour in txt reason and chkgive checked but nothing in txtpoints | The points text box must not be empty because there must be some points transferred in a points transfer | A message box will appear saying that | Success |  |
| 21 | btnpoints | 113150 in txtstudent and 10 in txtpoints | There must be a reason for every points transfer so that the student may know why | A message box will appear saying that there must be a reason | Success |  |
| 22 | btnpoints | 113150 in txtstudent and 10 in txtpoints which is more than the points of the staff and good behaviour in txtreason | The member of staff must have enough points to make the transfer without going into negative points | A message box will appear saying you do not have enough points left | Success |  |
| 23 | Btnpoints | 113150 in txtstudent and 10 in txtpoints and good behaviour in txtreason  And the staff member has enough points to do it | A member of staff should be able to give points if they have some to give | A message box will appear saying that they have completed the points transfer and the amount of points transferred will be removed from their points and the points transfer boxes will disappear and the points data grid will appear with the points transfer added and the student data grid will be refreshed | Success |  |
| 24 | btnpoints | 100603 in txtstudent  5 in txtpoints  Throwing pens in txtreason  Take points checked | The member of staff must be able to take away points from misbehaving students | A message box will appear saying that the points have been deducted then the points procedure information will be added to the points data grid. The students information on the student data grid will have 5 less points and since they had less than five they will have 0 | Success |  |
| 25 | btnExit | N/A | The member of staff must be able to leave the form | The form will close and the logon form will open | success |  |

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| studentrecordsform | | | | | | |
| Test NO | Object | Test data | Reason for test | Expected outcome | Outcome | Screen shot |
| 1 | Lblpoints | The student clicked on in the staffform | So that the member of staff can see who they are looking at and how many points that person has | The label will be populated with the points and name of the student | success |  |
| 2 | grdRecords | The records of the student clicked on in the staffform | The whole point of the form is so that the member of staff can see the records of the student selected | The data grid will be populated with the different points transactions that have happened to the student | success |  |
| 3 | Btnback | N/A | The member of staff must be able to leave the form | The form will close | success |  |

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| Admindirectory | | | | | | |
| Test NO | Object | Test data | Reason for test | Expected outcome | Outcome | Screen shot |
| 1 | btnAdminStaff | N/A | The teacher needs to be able to open the AdminStaff form | The admin form will close and the AdminStaff form will open | Success |  |
| 2 | btnAdminStudent | N/A | The teacher needs to be able to open the AdminStudent form | The admin form will close and the AdminStudent form will open | Success |  |
| 3 | btnAdminRewards | N/A | The teacher needs to be able to open the AdminRewards form | The admin form will close and the AdminStudent form will open | Success |  |
| 4 | Btnback | N/A | The teacher needs to be able to leave the admin form | The admin form will close and the staff form will open | success |  |

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| AdminStaff | | | | | | |
| Test NO | Object | Test data | Reason for test | Expected outcome | Outcome | Screen shot |
| 1 | grdStaff | The staff DAT file | The data grid needs to populate so that the files can be clicked on to edit | The data grid will populate with staff | success |  |
| 2 | Btnsearch | “he” in txtforename | The admin need to be able to effectively search for staff to speed up editing | The data grid will populate with only staff that have a first name starting with “he” | success |  |
| 3 | btnsearch | “wa” in txtsurname | The admin need to be able to effectively search for staff to speed up editing | The data grid will populate with only staff that have a last name starting with “wa” | success |  |
| 4 | btnsearch | “he” in txtforename and “wa” in txtsurname | The admin need to be able to effectively search for staff to speed up editing | The data grid will populate with only staff whose forename begins with “he” and whose surname begins with “wa” | success |  |
| 5 | btnsearch | Nothing in either text box | The data grid must be refreshable | The data grid will populate with all the staff | success |  |
| 6 | grdStaff | The file clicked on | The staff must be editable | the staffedit form will open containing the staff members data | success |  |
| 7 | btnAdd | N/A | The admin must be able to add new staff | The staffedit form will open | success |  |
| 8 | btnBack | N/A | The admin must be able to leave the form | The adminstaff form will close and the admindirctory form will open | success |  |

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| Staffedit form | | | | | | |
| Test NO | Object | Test data | Reason for test | Expected outcome | Outcome | Screen shot |
| 1 | btnEnd | Nothing in txtStaffID | There must be something in txtstaffID | A message box saying that the staff id must be the initials of the staff member | success |  |
| 2 | btnEnd | SSB in txtStaffID | You can’t have two people with the same staffID | A message box that says that the ID is already in use | Success |  |
| 3 | btnEnd | Nothing in txtForename | There must be a forename | A message box will appear saying that the forename must be a name | success |  |
| 4 | btnEnd | Nothing in txtSurname | Every one must have a surname | A message box will appear saying that surname must be a name | success |  |
| 5 | btnEnd | A word in the points left text box | The points must be a number | A message box saying that the points must be a number | success |  |
| 6 | btnEnd | No password | There must be a password | A message box saying that the password must be at least 6 characters | success |  |
| 7 | btnEnd | All new data added once add staff was clicked on adminstaff | You must be able to add staff | At the bottom of the data grid will be a new staff file | success |  |
| 8 | btnEnd | Data of TJ and I will change him to admin | You must be able to change members of staff | His file will now say he is a admin | success |  |
| 8 | txtStaffID | A 4 letter staff ID in txtstaffID | The staffID variable has a fixed length of 3 | The textbox will only allow the user to type in 3 characters | Success |  |
| 9 | txtForename | A 21 letter name in txtforename | The forename variable has a fixed length of 20 | The textbox will only allow the user to type in 20 characters | Success |  |
| 10 | txtSurname | A 21 letter name in txtsurname | The surname variable has a fixed length of 20 | The textbox will only allow the user to type in 20 characters | Success |  |
| 11 | txtPassword | A 33 character password in txtpassword | The password variable has a fixed length of 64 and the length of the input double when encrypted | The textbox will only allow the user to type in 32 characters | success |  |
| 12 | btnBack | N/A | You must be able to exit the form | The form will close | success |  |

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| AdminStudent | | | | | | |
| Test NO | Object | Test data | Reason for test | Expected outcome | Outcome | Screen shot |
| 1 | grdStudent | The student DAT file | The data grid needs to populate so that the files can be clicked on to edit | The data grid will populate with studnets | success |  |
| 2 | Btnsearch | “he” in txtforename | The admin need to be able to effectively search for students to speed up editing | The data grid will populate with only studnets that have a first name starting with “he” | success |  |
| 3 | btnsearch | “wa” in txtsurname | The admin need to be able to effectively search for students to speed up editing | The data grid will populate with only students that have a last name starting with “wa” | success |  |
| 4 | btnsearch | “he” in txtforename and “wa” in txtsurname | The admin need to be able to effectively search for students to speed up editing | The data grid will populate with only students whose forename begins with “he” and whose surname begins with “wa” | success |  |
| 5 | btnsearch | Nothing in either text box | The data grid must be refreshable | The data grid will populate with all the students | success |  |
| 6 | grdStudents | The file clicked on | The students must be editable | the studentedit form will open containing the student’s data | success |  |
| 7 | btnAdd | N/A | The admin must be able to add new students | The studentedit form will open | success |  |
| 8 | btnBack | N/A | The admin must be able to leave the form | The adminstudent form will close and the admindirctory form will open | success |  |

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| Studentedit form | | | | | | |
| Test NO | Object | Test data | Reason for test | Expected outcome | Outcome | Screen shot |
| 1 | btnEnd | Nothing in txtStudID | There must be something in txtstaffID | A message box saying that the staff id must be the initials of the staff member | success |  |
| 2 | btnEnd | 1000000 in txtstudID | The studID is 6 figures max | A message box saying that the staff id must be greater than 0 and less than 1000000 | Success |  |
| 3 | btnEnd | 113394 in txtStudID | You can’t have two people with the same studID | A message box that says that the ID is already in use | Success |  |
| 4 | btnEnd | Nothing in txtForename | There must be a forename | A message box will appear saying that the forename must be a name | success |  |
| 5 | btnEnd | Nothing in txtSurname | Everyone must have a surname | A message box will appear saying that surname must be a name | success |  |
| 6 | btnEnd | A word in the points text box | The points must be a number | A message box saying that the points must be a number | success |  |
| 7 | btnEnd | No password | There must be a password | A message box saying that the password must be at least 6 characters | success |  |
| 8 | btnEnd | All new data added once add staff was clicked on adminstaff | You must be able to add staff | At the bottom of the data grid will be a new staff file | success |  |
| 9 | btnEnd | Data of Jonathon keys and I will change his password to abc123 | You must be able to change students files | His file will now say his password is abc123 | success |  |
| 10 | txtStudID | A 7 figure stud ID in txtstudID | The studID is only meant to be a sixfigure number | The textbox will only allow the user to type in 6 characters | Success |  |
| 11 | txtforename | A 21 letter name in txtforename | The forename variable has a fixed length of 20 | The textbox will only allow the user to type in 20 characters | Success |  |
| 12 | txtsurname | A 21 letter name in txtsurname | The surname variable has a fixed length of 20 | The textbox will only allow the user to type in 20 characters | Success |  |
| 13 | txtpassword | A 33 character password in txtpassword | The password variable has a fixed length of 64 and the length of the input double when encrypted | The textbox will only allow the user to type in 32 characters | success |  |
| 14 | btnBack | N/A | You must be able to exit the form | The form will close | success |  |

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| Adminrewards form | | | | | | |
| Test NO | Object | Test data | Reason for test | Expected outcome | Outcome | Screen shot |
| 1 | grdRewards | The rewards DAT file | The data grid needs to be populated so that the rewards can be clicked on to edit | The data grid will populate with all the rewards | success |  |
| 2 | grdrewards | The reward clicked | The students must be editable | The rewardedit form will open populated with the rewards data | success |  |
| 3 | btnAdd | N/A | The admin must be able to add rewards | The rewardedit form will open | success |  |
| 4 | btnback | N/A | The admin must be able to leave the form | The form will close and the admin directory form will open | success |  |

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| --- | --- | --- | --- | --- | --- | --- |
| Rewardsedit form | | | | | | |
| Test NO | Object | Test data | Reason for test | Expected outcome | Outcome | Screen shot |
| 1 | btnEnd | Nothing in txtname | There must be a name | A message box will appear telling them that they must enter a name | success |  |
| 2 | Btnend | Noting in txtcost | There must be a cost | A message box will appear saying that the cost must be a number | success |  |
| 3 | Btnend | A word in cost | Cost must be a number | A message box will appear saying that the cost must be a number | success |  |
| 4 | btnEnd | A new record | The admin must be able to add rewards | A new reward will be at the bottom of the data grid on the adminreward form | success |  |
| 5 | btnEnd | Editing reward 16 so its cost is 20 | The admin must be able to edit rewards | The rewards will be edited so the data grid on adminreward form will have the rewards data changed | success |  |
| 6 | txtname | A 51 character name | The name variable has a fixed length of 50 | The text box will not let more then 50 characters get typed in | success |  |
| 7 | btnBack | N/A | The admin must be able to leave the form | The rewardsedit form will close | success |  |

## Evaluation

### Testing Outcomes

The testing went well as everything was in working order and since the testing was quite comprehensive, covering everything I could think of, I can be quite sure that it will be able to stand up well to use. It did show up that in some places there was no specific presence check error message but that was covered either by a relevant type check which I feel is still a suitable error message and so I feel no need to go back and change it. I also noticed that the encryption does not handle non ascii code characters correctly and therefore I should in the future limit the password to only allow ascii code characters for passwords. But in general the testing showed that everything was validated, from extreme values to the wrong format typed in, and that all the functions and procedures also worked showing that the program is suitable for use with the exception of the extended characters in passwords.

### Project Evaluation

I feel that my finished system is really good as it fits the purpose well, is protected from most human errors, works and completes the evaluation criteria and objectives:

This is because it keeps a consistent house style that is not very colourful and has clean minimalistic look. All the textboxes and buttons are labelled clearly and the layout is simple to understand with everything in an easily accessible place. The load time is instantaneous for most with a couple of exceptions like searching which is still less than 3 seconds. The size was kept well under the limit of 20 MB and is only 1.4 MB. The whole process was free and there for was within budget. All inputs were validated and passwords were necessary for logon and were required to be 6 characters minimum and alpha numeric. The project was completed within the deadline of April 21st and also is not in beach of the data protection act as all data was gained with consent, will not be shared, is able to be edited to keep it up to date, is relevant and not excessive and can and will be deleted when no longer necessary. It also did not contain anyone else’s code without crediting them and their consent

The student users are able to see their points, see why points were given or removed, they are able to buy rewards and are able to change their passwords. The staff are able see their points, they are able to see the points of all the students, they are able to change their passwords and are able to give and take points. The admin are able to both add and edit staff, students and rewards. They are able to promote staff to admin, they can see the passwords of all users decrypted so that they can reset them and they are able to give more points to staff to spend.

Due to the fulfilment of the evaluation criteria and objectives as shown above I feel that it is complete.

### Improvements

If I were to improve my system I might put in a way to stop the admin from being able to take away admin rights from everyone thus preventing the possibility of the school getting locked out of the system. This could be done by on log in searching the Staff DAT file and keeping an variable to store the number of admin in the system so if the number drops to 1 no one else can have admin rights taken away from them.

I would also probably add in other data grids on the staff form so as to make the staff able to quickly look at their tutor group. This could be done via tabs; they could have a whole school tab and a form tab. increasing the usability for the staff as in schools teachers have to take special care of their form and so it should translate into the system or otherwise the task of checking on their form, a common occurrence, would take way to long wasting a lot of time across a term.

I would design it to be more in the colour scheme of the school, presumably green as it is *Green Parks School*, and put their logo on the forms, probably top left corner, so that it seems more personalised to the school making it feel more part of the school.

I would put the ability for the staff to delete students, rewards and staff so as to save space when they are not needed or have left the school stream lining the system by making it take up less memory and also by truly deleting them they won’t have to be checked when searching which will speed up system processes.

I would connect the program so that by logging into a computer on the school network you also log onto the rewards system, this would and would speed up the process of using the program and since teachers will need to have it on all the time during lessons it makes sense for them and if you could only log on with your own network account it would also add security.

I could put in hot keys to speed up the process as currently one must click on buttons to activate them but for admin or teachers who might be using the system often it would make it more user friendly and make them able to complete their tasks faster.

I could add a way for admin to be able to print of the rewards procedure DAT file in a way that it is translated giving the students full name and form and the reward and then reset the DAT file. This would be good as currently the records are just saved to a DAT file which is not the nicest format to have to read and translate.