

RACE MANAGER APPLICATION



Tien Le - 292104

CIS 223 - 40

Course Project

Table of content

Table of content	1
Introduction - An overall look	4
Instructions - The user manual	5
Step 1: Starting up the program	5
Step 2: Selecting your options	5
Step 3: Putting in the teams	6
Step 4: Loading the runners	11
Step 5: Accessing the time files	15
Step 6: Seeing the results	18
Appendix A - Design documentations	21
Appendix A.1 - frmRMSplash.vb	21
Requirements documents	21
Use case definition	21
Appendix A.2 - frmRM0000.vb	22
Requirements documents	22
Use case definition	23
Appendix A.3 - frmRM1000.vb	24
Requirements documents	24
Use case definition	25
Appendix A.4 - frmRM2000.vb	26
Requirements documents	26
Use case definition	27
Appendix A.5 - frmRM3000.vb	28
Requirements documents	28
Use case definition	29
Appendix A.6 - frmRM4000.vb	30
Requirements documents	30
Use case definition	31
Appendix B - Test results	32
Appendix B.1 - The short version	32
frmRMSplash [Splash Form]	32
frmRM0000 [Main Menu]	33

frmRM1000 [Team Management]	33
frmRM1000 - [Load Teams]	34
frmRM1000 - [Add Teams]	35
frmRM1000 - [Delete Teams]	36
frmRM2000 [Runners Management]	37
frmRM2000 - [Load Runners]	38
frmRM2000 - [Add Runners]	38
frmRM2000 - [Del. Runners]	39
frmRM3000 [Time Management]	40
frmRM3000 - [Load Times]	41
frmRM3000 - [Enter BIB #s]	41
frmRM3000 - [Sync]	42
frmRM4000 [Results Management]	42
frmRM4000 - [Calculate Res.]	43
frmRM4000 - [Archive File]	43
Sample Text File Output File	44
Appendix B.2 - The full version	45
frmRMSplash [Splash Form]	45
frmRM0000 [Main Menu]	46
frmRM1000 [Team Management]	46
frmRM1000 - [Load Teams]	47
frmRM1000 - [Add Teams]	47
frmRM1000 - [Delete Teams]	49
frmRM2000 [Runners Management]	50
frmRM2000 - [Load Runners]	50
frmRM2000 - [Add Runners]	51
frmRM2000 - [Del. Runners]	52
frmRM3000 [Time Management]	53
frmRM3000 - [Load Times]	53
frmRM3000 - [Enter BIB from C:\Bob\BIBPositions.txt]	54
frmRM3000 - [Sync]	54
frmRM4000 [Results Management]	55
frmRM4000 - [Calculate Res.]	55
frmRM4000 - [Archive File]	56
Sample Text File Output File	56
Appendix C - The source code	57
Appendix C.1 - frmRMSplash.vb	57

Appendix C.2 - frmRM0000.vb	57
Appendix C.3 - frmRM1000.vb	59
Appendix C.4 - frmRM2000.vb	63
Appendix C.5 - frmRM3000.vb	67
Appendix C.6 - frmRM4000.vb	73
Appendix C.7 - RosterLoad.txt	79
Appendix C.8 - TimeFile.txt	81
Appendix C.9 - BIBPositions.txt	83
Appendix C.10 - RosterLoadshort.txt	85
Appendix C.11 - TimeFilesshort.txt	86
Appendix C.12 - RaceMgr-Result_TienLe.txt	86

Introduction - An overall look

The Race Manager is a program originally made by Bob Desilets. However it was just a shell with little to no code in it, making it *almost* unusable. The program published alongside this instruction manual is modified and streamline by me, Tien Le, the author and a student of Bob. The main purpose of this program is to keep track of all the information of a race, marathon such as the teams, the runners, the position of each runner when they finished the race and calculate results for each team, and even individual results. The results can be printed out as a text file if the user desired to.

I have put much time into this program, from trying arrays to using global variables, and ultimately decided to scrap all of them and start fresh with just simply copying line to line from the text file to the list box object. I am known for overthinking things in the past, and it is not surprising that he did the same when starting out this project. After coding the load functionality for the program, I move on to coding the delete button, which is simply removing an item in a list box. Coding for the add button was not hard, but I am not happy with the result, despite it working in the final version, see [step 3](#) of the instruction for more information.

Once the code for the three buttons had finished, I realised that most of the other buttons functioned the same and therefore did not take much time to finish the other ones. The last obstacle was of course the formatting of the final output text file. I had taken some time to think how to properly format them in a straight vertical column, and decided to use many spaces and zero-leading numbers to align all of them. The author is not proud of this part, since it is such a mess, see [source code frmRM4000](#) for more information.

Overall, this final project is very hard to get into. But thanks to some existing code with the shell, I was able to finish the project earlier than expected, and managed to snowball from there. I hope the person reading this can understand what I have done with the program and my struggles throughout this work.

Instructions - The user manual

Step 1: Starting up the program

- When the user first starts up the program, you should be able to see a beautiful splash screen that shows a picture of a marathon.
- After 4 seconds, the main program shows up.



Step 2: Selecting your options

- The program main menu frmRM0000 opens up with the following options
 - A text box containing the file path to the Roster Load text file
 - The default path is "C:\Bob\RosterLoad.txt"
 - Four buttons:
 - Team Manager [1-Team Mgr]
 - Runner Manager [2- Runner Mgr]

- Race Manager [**3- Race Mgr**]
- Results Manager [**4 - Result Mgr**]
- An exit button on the bottom right



- For now, buttons [3 - Race Mgr] and [4 - Result Mgr] are not enabled because those forms require information from form frmRM1000 and frmRM2000. These forms can be access and fill out through the buttons [1- Team Mgr] and [2 - Runner Mgr] respectively
- Click [**1 - Team Mgr**] to open up frmRM1000

Step 3: Putting in the teams

- The form frmRM1000 opens up with the following objects
 - A blank list box
 - A cute corgi jumping over the snow (*very important*)
 - A text box containing the same file path in frmRM0000
 - Three functional buttons
 - Load Teams [**Load Teams**]
 - Add Teams [**Add Teams**]

- Delete Teams **[Delete Teams]**
- A return button on the bottom right of the form

- Let's start by adding the teams. Click **[Load Teams]** to load in the team from the file path. The program will input blanks if you do not have the right text file in the correct file path. Please double check if the program doesn't show anything in the list box.

- To add teams, simply click **[Add Teams]**. An input box will show up and ask for the following informations:

- School code
- School name
- Coach's first name
- Coach's last name
- AD's first name
- AD's last name

RaceMgr - Add Team

Enter the school code

OK

Cancel

QCC

RaceMgr - Add Team

Enter the school name

OK

Cancel

Quinsig

RaceMgr - Add Team

Enter the Coach f-name

OK

Cancel

Bob

RaceMgr - Add Team

Enter the Coach l-name

OK

Cancel

Desilets

RaceMgr - Add Team

Enter the AD f-name

OK

Cancel

Steve

RaceMgr - Add Team

Enter the AD l-name

OK

Cancel

Rogers

Race Mgr-1000-Team Mgnt-Tien Le

School Code	School Name	Coach F-Name	Coach L-Name	AD F-Name	AD L-Name
WBCHS	Worcester Burncoat High School	Gail	Cain	Kevin	Kane
QRHS	Quabbin Regional High School	Bob	Desilets	Seth	Desile
GHS	Gardner High School	Jack	Smith	George	Fanning
NBHS	North Brookfield High School	Hughe	Fitch	Richard	Care
WHS	Winchendon High School	Bill	Nice	Sam	Adams
AUBHS	Auburn High School	Katie	Right	Alice	Wonderland
OXHS	Oxford High School	Mary	Cousin	Frank	Daughter
QCC	Quinsig	Bob	Desilets	Steve	Rogers

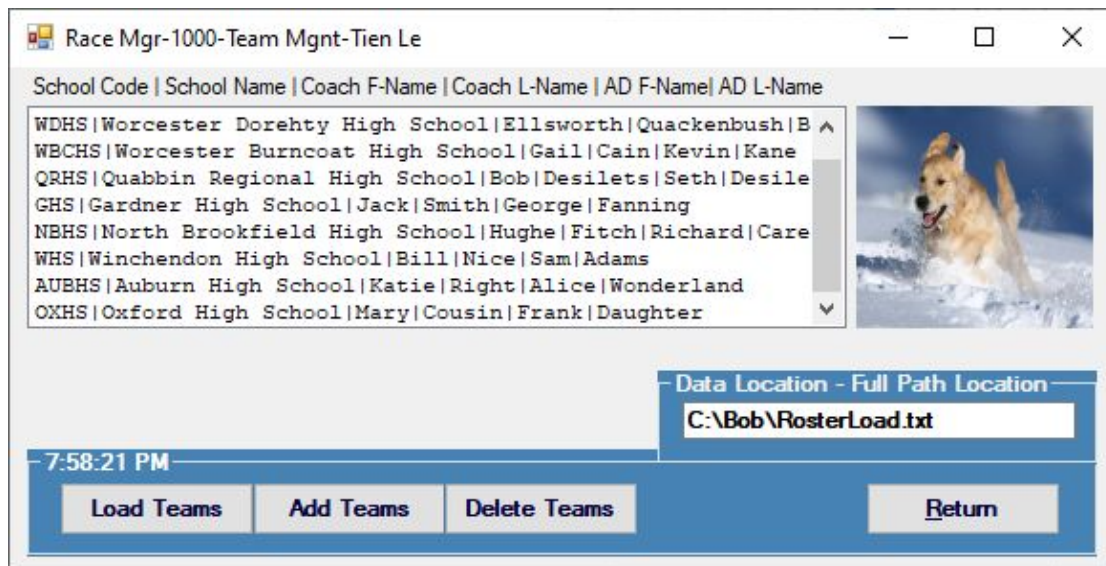
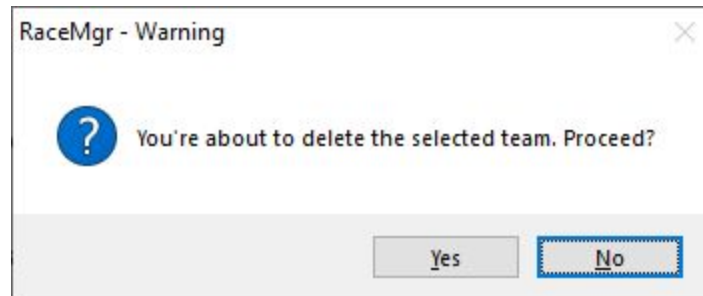
Data Location - Full Path Location

C:\Bob\RosterLoad.txt

7:55:03 PM

Load Teams Add Teams Delete Teams Return

- Note: Because this is an input box, when the user clicks **[Cancel]** it does not end the input procedure. The cancel button returns an empty string and therefore the program accepts the string as it and keeps on asking for the next information on the list above. You can not input a duplicating value.
- Now that you have added a team, let's try to delete it by clicking on the team you've just input (should be in the bottom of the list) and click **[Delete Teams]**. A prompt will show up to let you know you're about to delete a team.



- Click **[Return]** to return to the main menu frmRM0000
- Select **[2 - Runner Mgr]** to open frmRM2000



Step 4: Loading the runners

- The form frmRM2000 opens up with the following objects
 - A blank list box
 - Another cute corgi jumping over the snow (*very important!*)
 - A text box containing the same file path in frmRM0000
 - Three functional buttons
 - Load Runners [**Load Runners**]
 - Add Runners [**Add Runners**]
 - Delete Runners [**Del. Teams**]
 - A return button on the bottom right of the form

Race Mgr-2000-Runner Mgnt-Tien Le

School Code | BIB # | Runner F-Name | Runner L-Name

8:02:43 PM

Data Location - Full Path Location
C:\Bob\RosterLoad.txt

Load Runners Add Runners Del. Runners Return

- With mostly the same steps, let's start by adding the runners. Click [**Load Runners**] to load in the runners from the file path. The program will input blanks if you do not have the right text file in the correct file path. Please double check if the program doesn't show anything in the list box.

Race Mgr-2000-Runner Mgmt-Tien Le

School Code	BIB #	Runner F-Name	Runner L-Name
101	WSHS	Sanora	Hibshman
102	WSHS	Bridgette	Moffitt
103	WSHS	Karine	Chunn
104	WSHS	Shanita	Wind
105	WSHS	Fernanda	Parsell
106	WSHS	Albertha	Baringer
107	WSHS	Carlee	Sowards
108	WDHS	Maisha	Kleis

Data Location - Full Path Location
C:\Bob\RosterLoad.txt

8:03:27 PM

Load Runners Add Runners Del. Runners Return

- To add runners, simply click **[Add Runners]**. An input box will show up and ask for the following information:
 - School code
 - BIB number
 - Runner's first name
 - Runner's last name

RaceMgr - Add Runner

Enter the BIB number

269

OK Cancel

RaceMgr Add Runner

Enter school code

QCC

OK Cancel

RaceMgr Add Runner

Enter runner's f-name

OK

Cancel

Tien

RaceMgr Add Runner

Enter runner's l-name

OK

Cancel

Le

Race Mgr-2000-Runner Mgnt-Tien Le

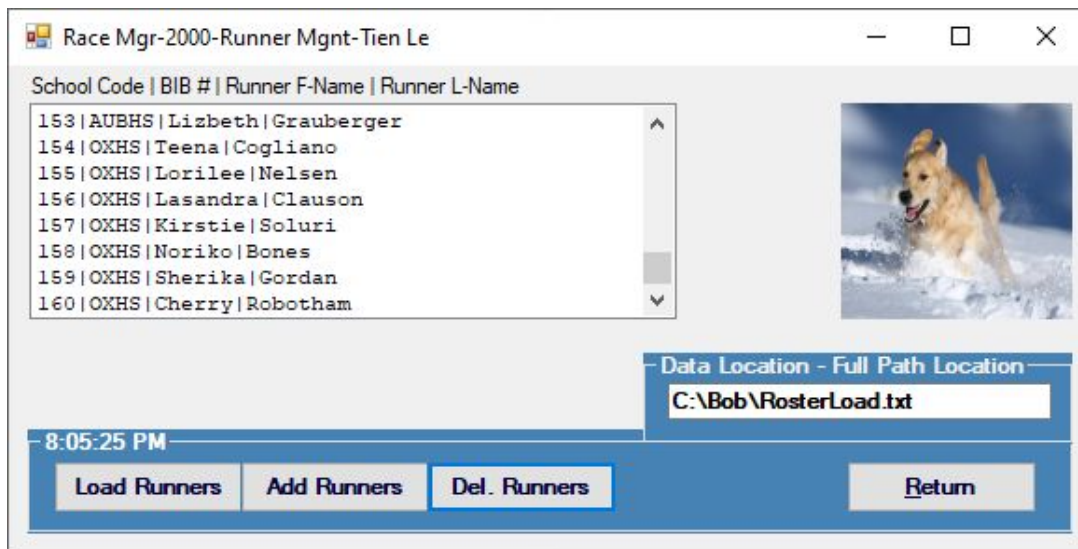
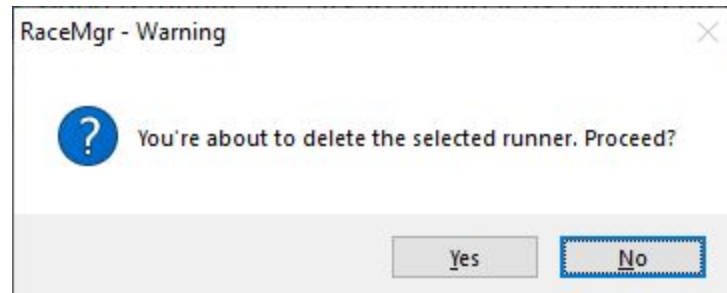
School Code	BIB #	Runner F-Name	Runner L-Name
154	OXHS	Teena	Cogliano
155	OXHS	Lorilee	Nelsen
156	OXHS	Lasandra	Clauson
157	OXHS	Kirstie	Soluri
158	OXHS	Noriko	Bones
159	OXHS	Sherika	Gordan
160	OXHS	Cherry	Robotham
269	QCC	Tien	Le

8:04:52 PM

Data Location - Full Path Location
C:\Bob\RosterLoad.txt

Load Runners Add Runners Del. Runners Return

- Note: Because this is an input box, when the user clicks **[Cancel]** it does not end the input procedure. The cancel button returns an empty string and therefore the program accepts the string as it and keeps on asking for the next information on the list above. You can not input a duplicating value.
- Now that you have added a runner, let's try to delete it by clicking on the runner you've just input (should be in the bottom of the list) and click **[Del. Runners]**. A prompt will show up to let you know you're about to delete a runner.



- Click [**Return**] to return to the main menu frmRM0000
- This time when you return to frmRM0000, you should be able to see that [**3 - Time Mgr**] is now enabled. Click on it to proceed to the next step.



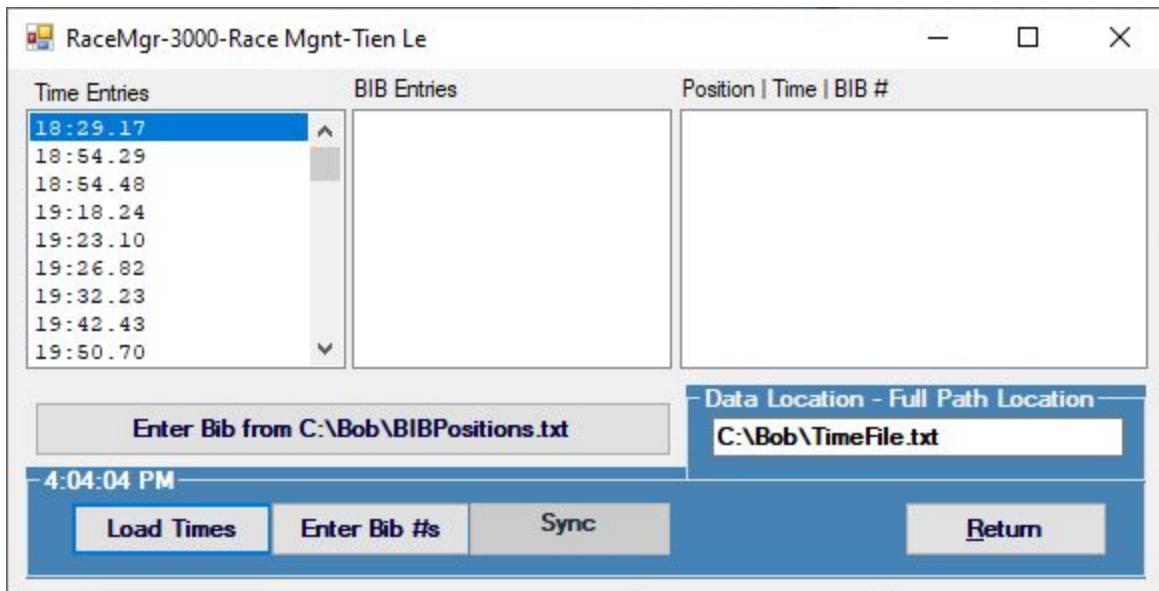
Step 5: Accessing the time files

- The form frmRM3000 opens up with the following objects
 - Three blank list boxes
 - A text box containing the same file path in frmRM0000, however, with the file changed to "TimeFile.txt".
 - The path should appear as "**C:\Bob\TimeFiles.txt**"
 - Four functional buttons
 - Load Times [**Load Times**]
 - Enter BIB numbers one by one [**Enter BIB #s**]
 - Sync the times with BIB numbers [**Sync**]
 - This button is disabled at the moment.
 - Enter BIB from an existing text file [**Enter BIB from C:\Bob\BIBPositions.txt**]
- A return button on the bottom right of the form

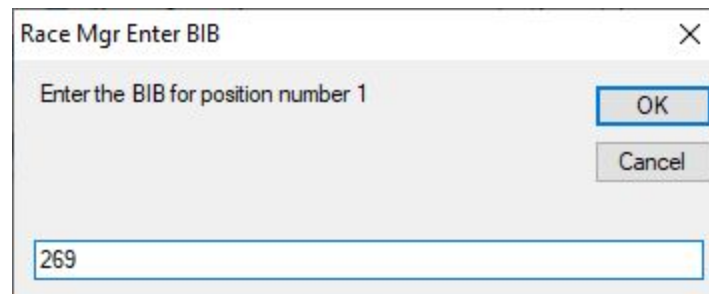
The screenshot shows the 'RaceMgr-3000-Race Mgmt-Tien Le' application window. It features three empty list boxes for 'Time Entries', 'BIB Entries', and 'Position | Time | BIB #'. Below the list boxes are two buttons: 'Enter Bib from C:\Bob\BIBPositions.txt' and 'Data Location - Full Path Location' with a text box containing 'C:\Bob\TimeFile.txt'. At the bottom, there is a status bar showing '4:03:27 PM' and a row of four buttons: 'Load Times', 'Enter Bib #s', 'Sync', and 'Return'.

- Let's start by adding the times. Click [**Load Times**] to load in the times from the file path. The program will input blanks if you do not have the right text file in the

correct file path. Please double check if the program doesn't show anything in the list box.



- For the next mini step, you have two options
 1. Using **[Enter BIB #s]**, enter each BIB number one by one.
 - This gets tedious quickly, and if you made a mistake you can't go back and change it.
 - Because this is an input box, when the user clicks **[Cancel]** *it does not end the input procedure. The cancel button returns an empty string and therefore the program accepts the string as it and keeps on asking for the next BIB number. You can not input a duplicating value.*



2. Using **[Enter BIB from C:\Bob\BIBPositions.txt]**, enter BIB numbers through a text file. *The author recommends using this method.*

- The program loads the BIB numbers of each runner based on their positions within the text file. If a runner comes first, his or her BIB number will appear at the top, and so on for the second, third...
- Using this method will give you room to change inputs from the text file itself and you don't have to input each one by hand.

RaceMgr-3000-Race Mgmt-Tien Le

Time Entries	BIB Entries	Position Time BIB #
18:29.17	1 - 135	
18:54.29	2 - 104	
18:54.48	3 - 102	
19:18.24	4 - 142	
19:23.10	5 - 119	
19:26.82	6 - 111	
19:32.23	7 - 125	
19:42.43	8 - 147	
19:50.70	9 - 160	

Enter Bib from C:\Bob\BIBPositions.txt

Data Location - Full Path Location
C:\Bob\TimeFile.txt

4:04:19 PM

Load Times Enter Bib #s Sync Return

- After you've input all the BIB numbers, **[Sync]** button will be enabled. Click the **[Sync]** button and sync the time with the corresponding BIB numbers. For each BIB number the program will find the correct runner and show it in the third list box. You can see the full list of runner placements after it's done syncing.

RaceMgr-3000-Race Mgmt-Tien Le

Time Entries	BIB Entries	Position Time BIB #
18:29.17	52 - 118	1 - 18:29.17 - 135 - NBHS Octa
18:54.29	53 - 109	2 - 18:54.29 - 104 - WSHS Shan
18:54.48	54 - 101	3 - 18:54.48 - 102 - WSHS Brid
19:18.24	55 - 123	4 - 19:18.24 - 142 - WHS Audie
19:23.10	56 - 107	5 - 19:23.10 - 119 - WBCHS Ale
19:26.82	57 - 141	6 - 19:26.82 - 111 - WDHS Hang
19:32.23	58 - 112	7 - 19:32.23 - 125 - QRHS Sher
19:42.43	59 - 116	8 - 19:42.43 - 147 - AUBHS Sha
19:50.70	60 - 145	9 - 19:50.70 - 160 - OXHS Cher

Enter Bib from C:\Bob\BIBPositions.txt

Data Location - Full Path Location
C:\Bob\TimeFile.txt

4:04:35 PM

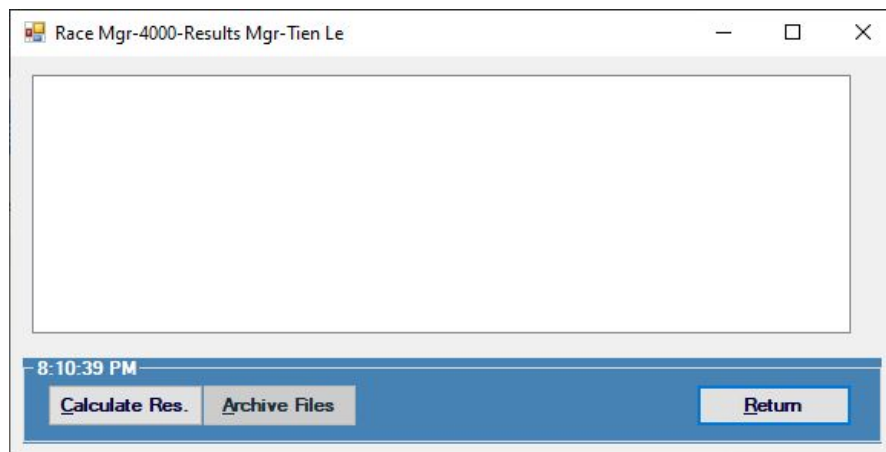
Load Times Enter Bib #s Sync Return

- Click **[Return]** to return to the main menu frmRM0000.
- This time when you return to frmRM0000, you should be able to see that **[4 - Result Mgr]** is now enabled. Click on it to proceed to the next step.

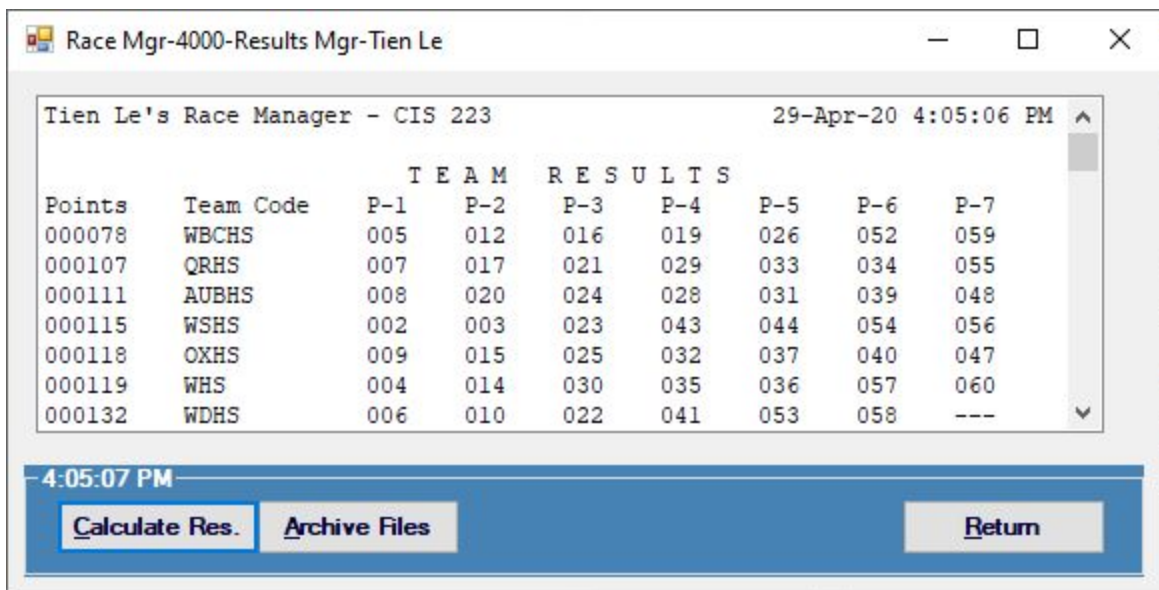


Step 6: Seeing the results

- The form frmRM4000 opens up with the following objects
 - A blank list boxes
 - Two functional buttons
 - Calculate the results **[Calculate Res.]**
 - Archive the displayed result **[Archive Files]**
 - A return button on the bottom right of the form



- Click **[Calculate Res.]**. The program will print out a well formatted result of the race including but not limited to:
 - Name of the author and the general date and time
 - Team results
 - Individuals results
- The team results and individuals results are sorted from the best points and the best placements respectively.



- Click **[Archive Files]** to archive displayed results. You can find the file at **"C:\Bob\RaceMgr-Result_TienLe.txt"**



RaceMgr-Result_TienLe.txt - Notepad

File Edit Format View Help

Tien Le's Race Manager - CIS 223 29-Apr-20 4:05:06 PM

		T E A M		R E S U L T S				
Points	Team Code	P-1	P-2	P-3	P-4	P-5	P-6	P-7
000078	WBCHS	005	012	016	019	026	052	059
000107	QRHS	007	017	021	029	033	034	055
000111	AUBHS	008	020	024	028	031	039	048
000115	WSHS	002	003	023	043	044	054	056
000118	OXHS	009	015	025	032	037	040	047
000119	WHS	004	014	030	035	036	057	060
000132	WDHS	006	010	022	041	053	058	---
000133	GHS	011	013	018	045	046	049	051
000158	NBHS	001	027	038	042	050	---	---

		I N D I V I D U A L			R E S U L T S
Position	Time	BIB	School	Runner	
1	18:29.17	135	NBHS	Octavia Gildea	
2	18:54.29	104	WSHS	Shanita Wind	
3	18:54.48	102	WSHS	Bridgette Moffitt	
4	19:18.24	142	WHS	Audie Couse	
5	19:23.10	119	WBCHS	Aleida Silman	
6	19:26.82	111	WDHS	Hang Hodapp	
7	19:32.23	125	QRHS	Sheri Wahlgren	
8	19:42.43	147	AUBHS	Shanda Walquist	
9	19:50.70	160	OXHS	Cherry Robotham	
10	19:55.82	108	WDHS	Maisha Kleis	
11	20:16.08	130	GHS	Rhiannon Estrello	
12	20:32.97	117	WBCHS	Eleanore Younkin	
13	20:33.22	132	GHS	Jolynn Salone	
14	20:53.83	140	WHS	Charlotte Clutter	
15	21:02.59	154	OXHS	Teena Cogliano	
16	21:16.38	120	WBCHS	My Dobyys	
17	21:21.08	126	QRHS	Brittney Tovey	
18	21:31.48	128	GHS	Jayna Laurent	
19	21:51.19	115	WBCHS	Renate Deforge	
20	22:01.83	152	AUBHS	Racquel Spengler	
21	22:10.93	121	QRHS	Kelley Barela	
22	22:11.91	110	WDHS	Deane Rocheleau	

Ln 33, Col 56 100% Windows (CRLF) UTF-8

- Click **[Return]** to return to the main menu frmRM0000
- Click **[Exit]** to exit the program.

Appendix A - Design documentations

Appendix A.1 - frmRMSplash.vb

Requirements documents

Date:	25 April, 2020
Date Submitted:	8 May, 2020
Application Title:	Race Manager - frmRMSplash.vb
Purpose:	frmRMSplash.vb show the user the splash screen to introduce the user to the program
Program Procedures:	In a Windows Classic Desktop application, the program shows a picture of a marathon as a splash screen.
Algorithms, Processing, and Conditions:	1. The user opens the program to display the splash screen
Notes and Restrictions:	The splash screen lasts for 4 seconds
Comments:	n/a

Use case definition

1. The Windows Classic Desktop application opens with a splash screen which lasts for 4 seconds.

Appendix A.2 - frmRM0000.vb

Requirements documents

Date:	25 April, 2020
Date Submitted:	8 May, 2020
Application Title:	Race Manager - frmRM0000.vb
Purpose:	frmRM0000.vb show the user the main menu with the options to choose [1 - Team Mgr] , [2 - Runners Mgr] , [3 - Time Mgr] and [4 - Results Mgr] . There's also a [Exit] button
Program Procedures:	In a Windows Classic Desktop application, the program shows the user the option to pick between Team Manager, Runners Manager, Time Manager and Result Manager.
Algorithms, Processing, and Conditions:	<ol style="list-style-type: none"> 1. The form appears with 4 options for choose from. 2. The user can choose [1 - Team Mgr] to go frmRM1000.vb 3. The user can choose [2 - Runners Mgr] to go frmRM2000.vb 4. The user can choose [3 - Time Mgr] to go frmRM3000.vb 5. The user can choose [4 - Results Mgr] to go frmRM4000.vb 6. The user can change the file path if desired 7. The user can choose Exit to exit the program
Notes and Restrictions:	<ul style="list-style-type: none"> - [3 - Time Mgr] button should not be enabled until frmRM1000 and frmRM2000 have been filled out - [4 - Results Mgr] button should not be enabled until

Comments:	frmRM3000 has been filled out n/a
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Use case definition

1. The Windows Classic Desktop application opens with a blank list box, a text box containing the file path, four functional buttons, and an exit button.
2. The form appears with 4 options to choose from.
3. The user can choose [**1 - Team Mgr**] to go frmRM1000.vb
4. The user can choose [**2 - Runners Mgr**] to go frmRM2000.vb
5. The user can choose [**3 - Time Mgr**] to go frmRM3000.vb
6. The user can choose [**4 - Results Mgr**] to go frmRM4000.vb
7. The user can change the file path if desired
8. The user can repeat step 2 to 7.
9. The user can choose Exit to exit the program

Appendix A.3 - frmRM1000.vb

Requirements documents

Date:	25 April, 2020
Date Submitted:	8 May, 2020
Application Title:	Race Manager - frmRM1000.vb
Purpose:	frmRM1000.vb show the user the main menu with the options to choose [Load Teams] , [Add Teams] , and [Delete Teams] . There's also a [Return] button.
Program Procedures:	In a Windows Classic Desktop application, the program shows the user the option to load in the teams, add more teams, and delete a team.
Algorithms, Processing, and Conditions:	<ol style="list-style-type: none"> 1. The user can choose [Load Teams] to load in the teams from the file in path file 2. The user can choose [Add Teams] to add in a team that they want to. 3. The user can choose [Delete Teams] to delete a selected team. 4. The user can change the file path to the text file if desired. 5. The user can choose [Return] to return to frmRM0000
Notes and Restrictions:	n/a
Comments:	<p><u>Note</u>: Because the author used an input box, when the user clicks [Cancel] <i>it does not end the input procedure. The cancel button returns an empty string and therefore the program accepts the string as it and keeps on</i></p>

	<i>asking for the next information on the list above. You can not input a duplicating value.</i>
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Use case definition

1. The Windows Classic Desktop application opens with a blank list box, a text box containing the file path, three functional buttons, and an exit button.
2. The form appears with 3 options to choose from.
3. The user can choose [**Load Teams**] to load in the teams from the file in path file
4. The user can choose [**Add Teams**] to add in a team that they want to.
5. The user can choose [**Delete Teams**] to delete a selected team.
6. The user can change the file path to the text file if desired.
7. The user can repeat step 2 to 6.
8. The user can choose [**Return**] to return to frmRM0000

Appendix A.4 - frmRM2000.vb

Requirements documents

Date:	25 April, 2020
Date Submitted:	8 May, 2020
Application Title:	Race Manager - frmRM2000.vb
Purpose:	frmRM2000.vb show the user the main menu with the options to choose [Load Runners] , [Add Runners] , and [Delete Runners] . There's also a [Return] button.
Program Procedures:	In a Windows Classic Desktop application, the program shows the user the option to load in the runners, add more runners, and delete a runner.
Algorithms, Processing, and Conditions:	<ol style="list-style-type: none"> 1. The user can choose [Load Runners] to load in the runners from the file in path file 2. The user can choose [Add Runners] to add in a runner that they want to. 3. The user can choose [Delete Runners] to delete a selected runner. 4. The user can change the file path to the text file if desired. 5. The user can choose [Return] to return to frmRM0000
Notes and Restrictions:	n/a
Comments:	<p><u>Note</u>: Because the author used an input box, when the user clicks [Cancel] <i>it does not end the input procedure. The cancel button returns an empty string and therefore the program accepts the string as it and keeps on</i></p>

	<i>asking for the next information on the list above. You can not input a duplicating value.</i>
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Use case definition

1. The Windows Classic Desktop application opens with a blank list box, a text box containing the file path, three functional buttons, and an exit button.
2. The form appears with 3 options to choose from.
3. The user can choose [**Load Runners**] to load in the runners from the file in path file
4. The user can choose [**Add Runners**] to add in a runner that they want to.
5. The user can choose [**Delete Runners**] to delete a selected runner.
6. The user can change the file path to the text file if desired.
7. The user can repeat step 2 to 6.
8. The user can choose [**Return**] to return to frmRM0000

Appendix A.5 - frmRM3000.vb

Requirements documents

Date:	25 April, 2020
Date Submitted:	8 May, 2020
Application Title:	Race Manager - frmRM3000.vb
Purpose:	frmRM3000.vb show the user the main menu with the options to choose [Load Time] , [Enter BIB #s] , [Enter Bib from C:\Bob\BIBPositions.txt] and [Sync] . There's also a [Return] button.
Program Procedures:	In a Windows Classic Desktop application, the program shows the user the option to load in the time, enter BIB number one by one, enter BIB number through a text file, and sync the BIB numbers with the time.
Algorithms, Processing, and Conditions:	<ol style="list-style-type: none"> 1. The user can choose [Load Time] to load in the time from the file in path file 2. The user can choose [Enter BIB #s] to enter BIB number one by one. 3. The user can choose [Enter Bib from C:\Bob\BIBPositions.txt] to input BIB number from a text file 4. The user can choose [Sync] to sync the time and the BIB numbers 5. The user can change the file path to the text file if desired. 6. The user can choose [Return] to return to frmRM0000
Notes and Restrictions:	- [Sync] button should not be enabled until the user has

Comments:	<p>input the time and the BIB numbers.</p> <p><u>Note:</u> Because the author used an input box, when the user clicks [Cancel] <i>it does not end the input procedure. The cancel button returns an empty string and therefore the program accepts the string as it and keeps on asking for the next information on the list above. You can not input a duplicating value.</i></p>
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Use case definition

1. The Windows Classic Desktop application opens with three list boxes, four buttons to load in the time, enter BIB number one by one, enter BIB number through a text file, and sync the BIB numbers with the time. There's also a text box containing file path and a return button.
2. The user can choose **[Load Time]** to load in the time from the file in path file
3. The user can choose **[Enter BIB #s]** to enter BIB number one by one.
4. The user can choose **[Enter Bib from C:\Bob\BIBPositions.txt]** to input BIB number from a text file
5. The user can choose **[Sync]** to sync the time and the BIB numbers
6. The user can change the file path to the text file if desired.
7. The user can repeat step 2 to 7.
8. The user can choose **[Return]** to return to frmRM0000

Appendix A.6 - frmRM4000.vb

Requirements documents

Date:	25 April, 2020
Date Submitted:	8 May, 2020
Application Title:	Race Manager - frmRM4000.vb
Purpose:	frmRM4000.vb show the user the main menu with the options to choose [Calculate Res.] and [Archive Results] . There's also a [Return] button.
Program Procedures:	In a Windows Classic Desktop application, the program shows the user the option to calculate the results and the ability to archive the results. There's also a return button.
Algorithms, Processing, and Conditions:	<ol style="list-style-type: none"> 1. The user can choose [Calculate Res.] to calculate the results and display it in the list box. 2. The user can choose [Archive Result] to output the results as a text file located in C:\Bob\RaceMgr-Result_TienLe 3. The user can choose [Return] to return to frmRM0000
Notes and Restrictions:	- [Archive Results] button should not be enabled until the user has clicked [Calculate Res.]
Comments:	n/a

Use case definition

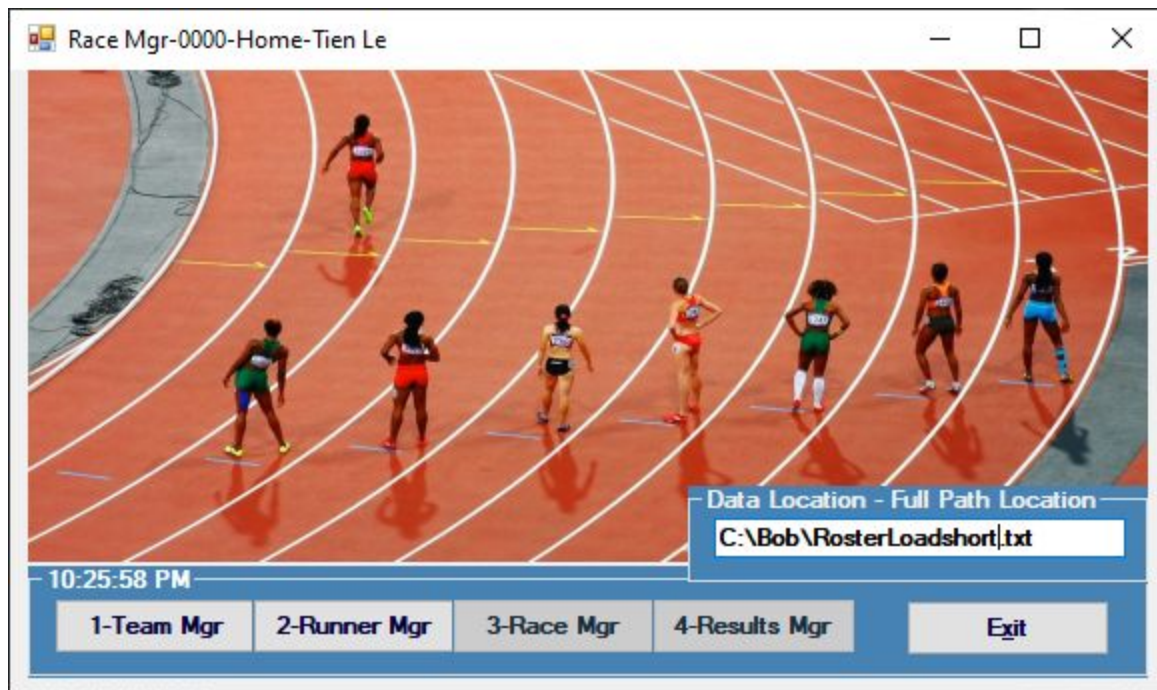
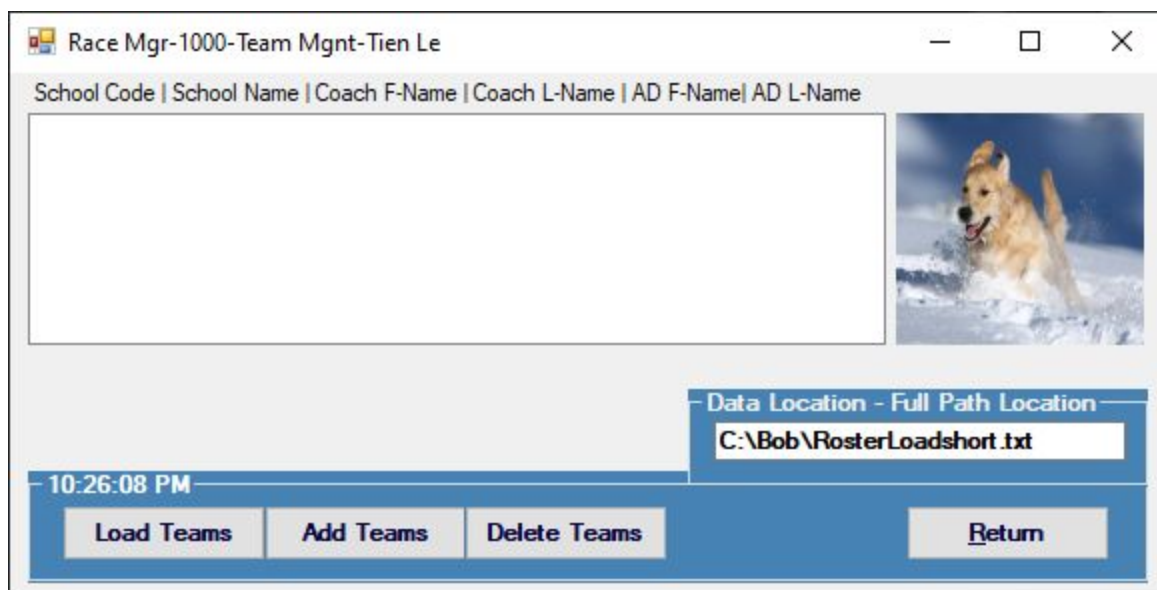
1. The Windows Classic Desktop application opens with a list box, two buttons to calculate the results and archive the results. There are also a return button
2. The form appears with 2 options to choose from.
3. The user can choose [**Calculate Res.**] to calculate the results and display it in the list box.
4. The user can choose [**Archive Result**] to output the results as a text file located in **C:\Bob\RaceMgr-Result_TienLe**
5. The user can choose [**Return**] to return to frmRM0000
6. The user can repeat step 2 to 5.
7. The user can choose [**Return**] to return to frmRM0000

Appendix B - Test results

Appendix B.1 - The short version

frmRMSplash [Splash Form]



frmRM0000 [Main Menu]frmRM1000 [Team Management]

frmRM1000 - [Load Teams]

Race Mgr-1000-Team Mgmt-Tien Le

School Code	School Name	Coach F-Name	Coach L-Name	AD F-Name	AD L-Name
WSHS	Worcester South High School	Glenn	Clauss	Bret	Zane
WDHS	Worcester Dorehty High School	Ellsworth	Quackenbush	B	
WBCHS	Worcester Burncoat High School	Gail	Cain	Kevin	Kane
QRHS	Quabbin Regional High School	Bob	Desilets	Seth	Desile
GHS	Gardner High School	Jack	Smith	George	Fanning
NBHS	North Brookfield High School	Hughe	Fitch	Richard	Care
WHS	Winchendon High School	Bill	Nice	Sam	Adams
AUBHS	Auburn High School	Katie	Right	Alice	Wonderland

10:27:50 PM

Data Location - Full Path Location
C:\Bob\RosterLoadshort.txt

Load Teams Add Teams Delete Teams Return

frmRM1000 - [Add Teams]

RaceMgr - Add Team

Enter the school code

OK

Cancel

CIS

RaceMgr - Add Team

Enter the school name

OK

Cancel

ComplInfo

RaceMgr - Add Team

Enter the Coach f-name

OK

Cancel

Big

RaceMgr - Add Team

Enter the Coach l-name

OK

Cancel

Ed

RaceMgr - Add Team

Enter the AD f-name

OK

Cancel

Bany

RaceMgr - Add Team

Enter the AD I-name

OK

Cancel

Allen

Race Mgr-1000-Team Mgmt-Tien Le

School Code	School Name	Coach F-Name	Coach L-Name	AD F-Name	AD L-Name
WBCHS	Worcester Burncoat High School	Gail	Cain	Kevin	Kane
QRHS	Quabbin Regional High School	Bob	Desilets	Seth	Desile
GHS	Gardner High School	Jack	Smith	George	Fanning
NBHS	North Brookfield High School	Hughe	Fitch	Richard	Care
WHS	Winchendon High School	Bill	Nice	Sam	Adams
AUBHS	Auburn High School	Katie	Right	Alice	Wonderland
OXHS	Oxford High School	Mary	Cousin	Frank	Daughter
CIS	CompInfo	Big	Ed	Barry	Allen

Data Location - Full Path Location

C:\Bob\RosterLoadshort.txt

10:29:06 PM

Load Teams Add Teams Delete Teams Return

frmRM1000 - [Delete Teams]

RaceMgr - Warning

?


You're about to delete the selected team. Proceed?

Yes No

Race Mgr-1000-Team Mgnt-Tien Le

School Code | School Name | Coach F-Name | Coach L-Name | AD F-Name | AD L-Name

WBCHS	Worcester Burncoat High School	Gail	Cain	Kevin	Kane
QRHS	Quabbin Regional High School	Bob	Desilets	Seth	Desile
GHS	Gardner High School	Jack	Smith	George	Fanning
NBHS	North Brookfield High School	Hughe	Fitch	Richard	Care
WHS	Winchendon High School	Bill	Nice	Sam	Adams
AUBHS	Auburn High School	Katie	Right	Alice	Wonderland
OXHS	Oxford High School	Mary	Cousin	Frank	Daughter



Data Location - Full Path Location
C:\Bob\RosterLoadshort.txt

10:29:17 PM


Load Teams Add Teams Delete Teams Return

frmRM2000 [Runners Management]

Race Mgr-2000-Runner Mgnt-Tien Le

School Code | BIB # | Runner F-Name | Runner L-Name

--	--	--	--



Data Location - Full Path Location
C:\Bob\RosterLoadshort.txt


10:29:37 PM

Load Runners Add Runners Del. Runners Return

frmRM2000 - [Load Runners]

Race Mgr-2000-Runner Mgnt-Tien Le

School Code	BIB #	Runner F-Name	Runner L-Name
101	WSHS	Sanora	Hibshman
102	WSHS	Bridgette	Moffitt
103	WSHS	Karine	Chunn
104	WSHS	Shanita	Wind
105	WSHS	Fernanda	Parsell
106	WSHS	Albertha	Baringer
107	WSHS	Carlee	Sowards
108	WDHS	Maisha	Kleis



Data Location - Full Path Location
C:\Bob\RosterLoadshort.txt

10:29:43 PM

Load Runners Add Runners Del. Runners Return

frmRM2000 - [Add Runners]

RaceMgr - Add Runner

Enter the BIB number

OK Cancel

047

RaceMgr Add Runner

Enter school code

OK Cancel

DCU

RaceMgr Add Runner

Enter runner's f-name

OK

Cancel

Reverse

RaceMgr Add Runner

Enter runner's l-name


OK

Cancel

Flash

Race Mgr-2000-Runner Mgnt-Tien Le

School Code	BIB #	Runner F-Name	Runner L-Name
107	WSHS	Carlee	Sowards
108	WDHS	Maisha	Kleis
109	WDHS	Lezlie	Berson
110	WDHS	Deane	Rocheleau
111	WDHS	Hang	Hodapp
112	WDHS	Zola	Dorrough
113	WDHS	Shalon	Mcmonigle
047	DCU	Reverse	Flash



Data Location - Full Path Location
C:\Bob\RosterLoadshort.txt

10:30:47 PM

Load Runners Add Runners Del. Runners Return

frmRM2000 - [Del. Runners]

RaceMgr - Warning


? You're about to delete the selected runner. Proceed?

Yes No

Race Mgr-2000-Runner Mgnt-Tien Le

School Code | BIB # | Runner F-Name | Runner L-Name

107	WSHS	Carlee	Sowards
108	WDHS	Maisha	Kleis
109	WDHS	Lezlie	Berson
110	WDHS	Deane	Rocheleau
111	WDHS	Hang	Hodapp
112	WDHS	Zola	Dorrrough
113	WDHS	Shalon	Mcmonigle



Data Location - Full Path Location
C:\Bob\RosterLoadshort.txt

10:31:01 PM

Load Runners Add Runners Del. Runners Return

frmRM3000 [Time Management]

RaceMgr-3000-Race Mgnt-Tien Le

Time Entries BIB Entries Position | Time | BIB #

--	--	--

Enter Bib from C:\Bob\BIBPositions.txt

Data Location - Full Path Location
C:\Bob\TimeFileShort.txt

4:10:16 PM

Load Times Enter Bib #s Sync Return

frmRM3000 - [Load Times]

RaceMgr-3000-Race Mgnt-Tien Le

Time Entries	BIB Entries	Position Time BIB #
18:29.17 18:54.29 18:54.48 19:18.24 19:23.10 19:26.82 19:32.23 19:42.43 19:50.70		

Enter Bib from C:\Bob\BIBPositions.txt

Data Location - Full Path Location
C:\Bob\TimeFileShort.txt

4:09:46 PM

Load Times Enter Bib #s Sync Return

frmRM3000 - [Enter BIB #s]

Race Mgr Enter BIB

Enter the BIB for position number 1

OK Cancel

101

RaceMgr-3000-Race Mgnt-Tien Le

Time Entries	BIB Entries	Position Time BIB #
18:29.17 18:54.29 18:54.48 19:18.24 19:23.10 19:26.82 19:32.23 19:42.43 19:50.70	1 - 101 2 - 102 3 - 103 4 - 104 5 - 105 6 - 106 7 - 107 8 - 108 9 - 109	

Enter Bib from C:\Bob\BIBPositions.txt

Data Location - Full Path Location
C:\Bob\TimeFileShort.txt

4:10:51 PM

Load Times Enter Bib #s Sync Return

frmRM3000 - [Sync]

RaceMgr-3000-Race Mgnt-Tien Le

Time Entries	BIB Entries	Position Time BIB #
18:29.17	5 - 105	1 - 18:29.17 - 101 - WSHS Sano
18:54.29	6 - 106	2 - 18:54.29 - 102 - WSHS Brid
18:54.48	7 - 107	3 - 18:54.48 - 103 - WSHS Kari
19:18.24	8 - 108	4 - 19:18.24 - 104 - WSHS Shan
19:23.10	9 - 109	5 - 19:23.10 - 105 - WSHS Fern
19:26.82	10 - 110	6 - 19:26.82 - 106 - WSHS Albe
19:32.23	11 - 111	7 - 19:32.23 - 107 - WSHS Carl
19:42.43	12 - 112	8 - 19:42.43 - 108 - WDHS Mais
19:50.70	13 - 113	9 - 19:50.70 - 109 - WDHS Lez1

Enter Bib from C:\Bob\BIBPositions.txt

Data Location - Full Path Location
C:\Bob\TimeFileShort.txt

4:11:01 PM

Load Times Enter Bib #s Sync Return

frmRM4000 [Results Management]

Race Mgr-4000-Results Mgr-Tien Le

10:22:35 PM

Calculate Res. Archive Files Return

frmRM4000 - [Calculate Res.]

Race Mgr-4000-Results Mgr-Tien Le

Tien Le's Race Manager - CIS 223 29-Apr-20 4:11:13 PM

		T E A M		R E S U L T S				
Points	Team Code	P-1	P-2	P-3	P-4	P-5	P-6	P-7
000015	WSHS	001	002	003	004	005	006	007
000050	WDHS	008	009	010	011	012	013	---

		I N D I V I D U A L			R E S U L T S
Position	Time	BIB	School	Runner	
1	18:29.17	101	WSHS	Sanora Hibshman	
2	18:54.29	102	WSHS	Bridgette Moffitt	

4:11:15 PM

Calculate Res. Archive Files Return

frmRM4000 - [Archive File]

RaceMgr

Successfully created C:\Bob\RaceMgr-Result_TienLe.txt

OK

Sample Text File Output File

RaceMgr-Result_TienLe.txt - Notepad

File Edit Format View Help

Tien Le's Race Manager - CIS 223 29-Apr-20 4:11:13 PM

		TEAM RESULTS						
Points	Team Code	P-1	P-2	P-3	P-4	P-5	P-6	P-7
000015	WSHS	001	002	003	004	005	006	007
000050	WDHS	008	009	010	011	012	013	---

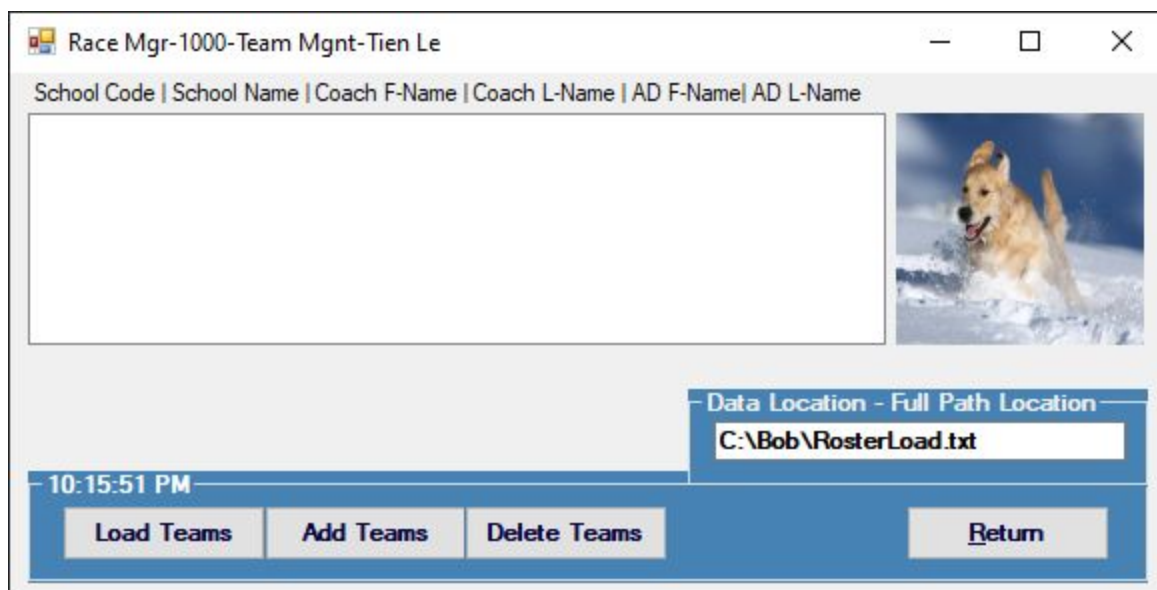
		INDIVIDUAL RESULTS		
Position	Time	BIB	School	Runner
1	18:29.17	101	WSHS	Sanora Hibshman
2	18:54.29	102	WSHS	Bridgette Moffitt
3	18:54.48	103	WSHS	Karine Chunn
4	19:18.24	104	WSHS	Shanita Wind
5	19:23.10	105	WSHS	Fernanda Parsell
6	19:26.82	106	WSHS	Albertha Baringer
7	19:32.23	107	WSHS	Carlee Sowards
8	19:42.43	108	WDHS	Maisha Kleis
9	19:50.70	109	WDHS	Lezlie Berson
10	19:55.82	110	WDHS	Deane Rocheleau
11	20:16.08	111	WDHS	Hang Hodapp
12	20:32.97	112	WDHS	Zola Dorrough
13	20:33.22	113	WDHS	Shalon Mcmonigle

Ln 1, Col 1 100% Windows (CRLF) UTF-8

Appendix B.2 - The full version

frmRMSplash [Splash Form]



frmRM0000 [Main Menu]frmRM1000 [Team Management]

frmRM1000 - [Load Teams]

Race Mgr-1000-Team Mgmt-Tien Le

School Code	School Name	Coach F-Name	Coach L-Name	AD F-Name	AD L-Name
WSHS	Worcester South High School	Glenn	Clauss	Bret	Zane
WDHS	Worcester Dorehty High School	Ellsworth	Quackenbush	B	
WBCHS	Worcester Burncoat High School	Gail	Cain	Kevin	Kane
QRHS	Quabbin Regional High School	Bob	Desilets	Seth	Desile
GHS	Gardner High School	Jack	Smith	George	Fanning
NBHS	North Brookfield High School	Hughe	Fitch	Richard	Care
WHS	Winchendon High School	Bill	Nice	Sam	Adams
AUBHS	Auburn High School	Katie	Right	Alice	Wonderland

Data Location - Full Path Location
C:\Bob\RosterLoad.txt

10:15:58 PM

Load Teams Add Teams Delete Teams Return

frmRM1000 - [Add Teams]

RaceMgr - Add Team

Enter the school code

OK Cancel

QCC

RaceMgr - Add Team

Enter the school name

OK Cancel

Quinsig

RaceMgr - Add Team

Enter the Coach f-name

OK Cancel

Bob

RaceMgr - Add Team

Enter the Coach L-name

OK

Cancel

Ross

RaceMgr - Add Team

Enter the AD f-name

OK

Cancel

Chris

RaceMgr - Add Team

Enter the AD l-name

OK

Cancel

McCloud

Race Mgr-1000-Team Mgnt-Tien Le

School Code	School Name	Coach F-Name	Coach L-Name	AD F-Name	AD L-Name
WBCHS	Worcester Burncoat High School	Gail	Cain	Kevin	Kane
QRHS	Quabbin Regional High School	Bob	Desilets	Seth	Desile
GHS	Gardner High School	Jack	Smith	George	Fanning
NBHS	North Brookfield High School	Hughe	Fitch	Richard	Care
WHS	Winchendon High School	Bill	Nice	Sam	Adams
AUBHS	Auburn High School	Katie	Right	Alice	Wonderland
OXHS	Oxford High School	Mary	Cousin	Frank	Daughter
QCC	Quinsig	Bob	Ross	Chris	McCloud

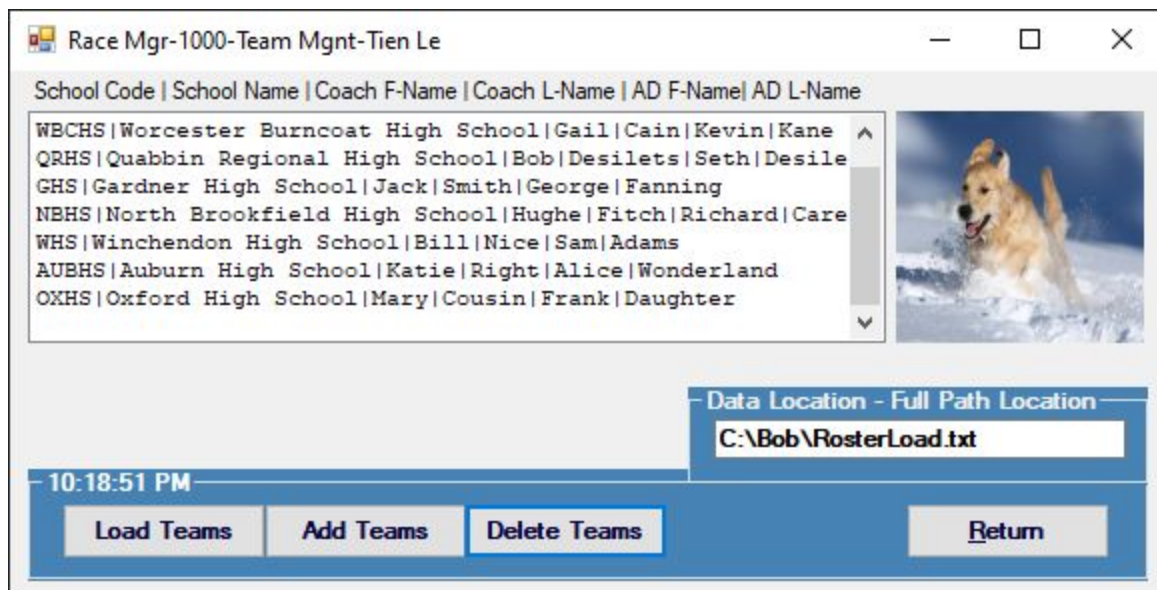
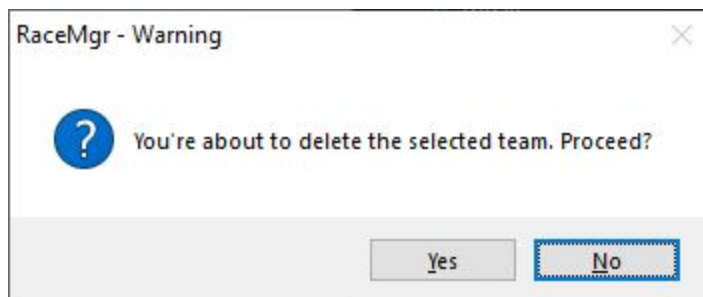
Data Location - Full Path Location

C:\Bob\RosterLoad.txt

10:17:50 PM

Load Teams Add Teams Delete Teams Return

frmRM1000 - [Delete Teams]



frmRM2000 [Runners Management]

frmRM2000 - [Load Runners]

Race Mgr-2000-Runner Mgnt-Tien Le

School Code | BIB # | Runner F-Name | Runner L-Name

101 | WSHS | Sanora | Hibshman

102 | WSHS | Bridgette | Moffitt

103 | WSHS | Karine | Chunn


104 | WSHS | Shanita | Wind

105 | WSHS | Fernanda | Parsell

106 | WSHS | Albertha | Baringer

107 | WSHS | Carlee | Sowards

108 | WDHS | Maisha | Kleis



Data Location - Full Path Location
C:\Bob\RosterLoad.txt

10:19:25 PM

Load Runners

Add Runners

Del. Runners

Return

frmRM2000 - [Add Runners]

RaceMgr - Add Runner

Enter the BIB number

OK

Cancel

269

RaceMgr Add Runner

Enter school code

OK

Cancel

QCC

RaceMgr Add Runner

Enter runner's f-name

OK

Cancel

Tien|

RaceMgr Add Runner

Enter runner's l-name

OK


Cancel

Le|

Race Mgr-2000-Runner Mgnt-Tien Le

School Code | BIB # | Runner F-Name | Runner L-Name

154	OXHS	Teena	Cogliano
155	OXHS	Lorilee	Nelsen
156	OXHS	Lasandra	Clauson
157	OXHS	Kirstie	Soluri
158	OXHS	Noriko	Bones
159	OXHS	Sherika	Gordan
160	OXHS	Cherry	Robotham
269	QCC	Tien	Le



Data Location - Full Path Location
C:\Bob\RosterLoad.txt

10:21:00 PM

Load Runners Add Runners Del. Runners Return

frmRM2000 - [Del. Runners]

RaceMgr - Warning


? You're about to delete the selected runner. Proceed?

Yes No

Race Mgr-2000-Runner Mgnt-Tien Le

School Code | BIB # | Runner F-Name | Runner L-Name

154	OXHS	Teena	Cogliano
155	OXHS	Lorilee	Nelsen
156	OXHS	Lasandra	Clauson
157	OXHS	Kirstie	Soluri
158	OXHS	Noriko	Bones
159	OXHS	Sherika	Gordan
160	OXHS	Cherry	Robotham



Data Location - Full Path Location
C:\Bob\RosterLoad.txt

10:21:33 PM

Load Runners Add Runners Del. Runners Return

frmRM3000 [Time Management]

The screenshot shows the 'RaceMgr-3000-Race Mgnt-Tien Le' application window. It features three main data entry areas at the top: 'Time Entries', 'BIB Entries', and 'Position | Time | BIB #'. Below these are buttons for 'Enter Bib from C:\Bob\BIBPositions.txt' and a 'Data Location - Full Path Location' field containing 'C:\Bob\TimeFile.txt'. A status bar at the bottom left shows the time '4:13:06 PM'. At the bottom right are buttons for 'Load Times', 'Enter Bib #s', 'Sync', and 'Return'.

Time Entries	BIB Entries	Position Time BIB #
--------------	-------------	-------------------------

Enter Bib from C:\Bob\BIBPositions.txt

Data Location - Full Path Location
C:\Bob\TimeFile.txt

4:13:06 PM

Load Times Enter Bib #s Sync Return

frmRM3000 - [Load Times]

This screenshot shows the same application window but with the 'Load Times' button selected. The 'Time Entries' list is now populated with a list of times, with '18:29.17' selected at the top. The other UI elements, including the 'BIB Entries' and 'Position | Time | BIB #' fields, the file path 'C:\Bob\TimeFile.txt', and the bottom buttons, remain the same. The status bar now shows '4:13:14 PM'.

Time Entries	BIB Entries	Position Time BIB #
18:29.17		
18:54.29		
18:54.48		
19:18.24		
19:23.10		
19:26.82		
19:32.23		
19:42.43		
19:50.70		

Enter Bib from C:\Bob\BIBPositions.txt

Data Location - Full Path Location
C:\Bob\TimeFile.txt

4:13:14 PM

Load Times Enter Bib #s Sync Return

frmRM3000 - [Enter BIB from C:\Bob\BIBPositions.txt]

RaceMgr-3000-Race Mgnt-Tien Le

Time Entries	BIB Entries	Position Time BIB #
18:29.17	1 - 135	
18:54.29	2 - 104	
18:54.48	3 - 102	
19:18.24	4 - 142	
19:23.10	5 - 119	
19:26.82	6 - 111	
19:32.23	7 - 125	
19:42.43	8 - 147	
19:50.70	9 - 160	

Enter Bib from C:\Bob\BIBPositions.txt

Data Location - Full Path Location
C:\Bob\TimeFile.txt

4:13:23 PM

Load Times Enter Bib #s Sync Return

frmRM3000 - [Sync]

RaceMgr-3000-Race Mgnt-Tien Le

Time Entries	BIB Entries	Position Time BIB #
18:29.17	52 - 118	1 - 18:29.17 - 135 - NBHS Octa
18:54.29	53 - 109	2 - 18:54.29 - 104 - WSHS Shan
18:54.48	54 - 101	3 - 18:54.48 - 102 - WSHS Brid
19:18.24	55 - 123	4 - 19:18.24 - 142 - WHS Audie
19:23.10	56 - 107	5 - 19:23.10 - 119 - WBCHS Ale
19:26.82	57 - 141	6 - 19:26.82 - 111 - WDHS Hang
19:32.23	58 - 112	7 - 19:32.23 - 125 - QRHS Sher
19:42.43	59 - 116	8 - 19:42.43 - 147 - AUBHS Sha
19:50.70	60 - 145	9 - 19:50.70 - 160 - OXHS Cher

Enter Bib from C:\Bob\BIBPositions.txt

Data Location - Full Path Location
C:\Bob\TimeFile.txt

4:13:31 PM

Load Times Enter Bib #s Sync Return

frmRM4000 [Results Management]

Race Mgr-4000-Results Mgr-Tien Le

10:22:35 PM

Calculate Res. Archive Files Return

frmRM4000 - [Calculate Res.]

Race Mgr-4000-Results Mgr-Tien Le

Tien Le's Race Manager - CIS 223 29-Apr-20 4:13:41 PM

Points	Team Code	T E A M R E S U L T S						
		P-1	P-2	P-3	P-4	P-5	P-6	P-7
000078	WBCHS	005	012	016	019	026	052	059
000107	QRHS	007	017	021	029	033	034	055
000111	AUBHS	008	020	024	028	031	039	048
000115	WSHS	002	003	023	043	044	054	056
000118	OXHS	009	015	025	032	037	040	047
000119	WHS	004	014	030	035	036	057	060
000132	WDHS	006	010	022	041	053	058	---

4:13:43 PM

Calculate Res. Archive Files Return

frmRM4000 - [Archive File]



Sample Text File Output File

RaceMgr-Result_TienLe.txt - Notepad

File Edit Format View Help

Tien Le's Race Manager - CIS 223 29-Apr-20 4:13:41 PM

		T E A M		R E S U L T S				
Points	Team Code	P-1	P-2	P-3	P-4	P-5	P-6	P-7
000078	WBCHS	005	012	016	019	026	052	059
000107	QRHS	007	017	021	029	033	034	055
000111	AUBHS	008	020	024	028	031	039	048
000115	WSHS	002	003	023	043	044	054	056
000118	OXHS	009	015	025	032	037	040	047
000119	WHS	004	014	030	035	036	057	060
000132	WDHS	006	010	022	041	053	058	---
000133	GHS	011	013	018	045	046	049	051
000158	NBHS	001	027	038	042	050	---	---

		I N D I V I D U A L		R E S U L T S
Position	Time	BIB	School	Runner
1	18:29.17	135	NBHS	Octavia Gildea
2	18:54.29	104	WSHS	Shanita Wind
3	18:54.48	102	WSHS	Bridgette Moffitt
4	19:18.24	142	WHS	Audie Couse
5	19:23.10	119	WBCHS	Aleida Silman
6	19:26.82	111	WDHS	Hang Hodapp
7	19:32.23	125	QRHS	Sheri Wahlgren
8	19:42.43	147	AUBHS	Shanda Walquist
9	19:50.70	160	OXHS	Cherry Robotham
10	19:55.82	108	WDHS	Maisha Kleis

Ln 1, Col 1 100% Windows (CRLF) UTF-8

Appendix C - The source code

Appendix C.1 - frmRMSplash.vb

There is no code for this form

Appendix C.2 - frmRM0000.vb

```
Public Class frmRM0000
```

```
    ' Shell Author: Bob Desilets
    ' Modified by: Tien Le
    ' Module name: frmRM0000
    ' Last Modified date: 25-April-2020
    ' Module description: form 0000 main menu
```

```
    Private Sub Timer1_Tick(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Timer1.Tick
        grpCommand.Text = TimeOfDay
        frmRM1000.grpCommand.Text = TimeOfDay
        frmRM2000.grpCommand.Text = TimeOfDay
        frmRM3000.grpCommand.Text = TimeOfDay
        frmRM4000.grpCommand.Text = TimeOfDay
    End Sub
```

```
    Private Sub btnTeamMgr_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnTeamMgr.Click
        frmRM1000.Show()
        Me.Hide()
    End Sub
```

```
    Private Sub btnRunnerMgr_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnRunnerMgr.Click
        frmRM2000.Show()
        Me.Hide()
    End Sub
```



```
Private Sub btnRaceMgr_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles btnRaceMgr.Click  
    frmRM3000.Show()  
    Me.Hide()  
End Sub
```

```
Private Sub btnResultsMgr_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles btnResultsMgr.Click  
  
    frmRM4000.Show()  
    Me.Hide()  
End Sub
```

```
Private Sub btnExit_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles btnExit.Click  
    Me.Close()  
End Sub  
End Class
```

Appendix C.3 - frmRM1000.vb

```
Imports System.IO
```

```
' Shell Author: Bob Desilets
' Modified by: Tien Le
' Module name: frmRM1000
' Last Modified date: 25-April-2020
' Module description: form 1000 team mgr
Public Class frmRM1000
    Private Sub btnLoadTeams_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnLoadTeam.Click
        ' This routine loads the lstTeam box from an ASCII .txt file
        ' # School [School Code | Name | Coach F-Name| Coach L-Name | AD
F-Name | AD L-Name]
        Dim strRow As String
        Dim bolFoundCode As Boolean = False
        Dim bolEndCode As Boolean = False
        Dim bolFoundDup As Boolean = False
        Dim intPosition As Integer
        Dim intPosition2 As Integer
        Dim strTeamCodeIn As String

        Dim textIn As StreamReader =
            New StreamReader(New FileStream(txtFilePath.Text,
FileMode.OpenOrCreate, FileAccess.Read))

        ' Clear Team listbox
        lstTeam.Items.Clear()

        Do While textIn.Peek <> -1 And Not bolEndCode
            Me.Refresh()
            strRow = textIn.ReadLine.Trim
            If Not bolFoundCode Then
                If "# SCHOOL " = UCase(Mid(strRow, 1, 9)) Then
                    bolFoundCode = True
                End If
            Else
```

```

    If Mid(strRow, 1, 2) <> "# " Then
        For Each item As String In lstTeam.Items
            intPosition = InStr(1, strRow, "|")
            strTeamCodeIn = Mid(strRow, 1, intPosition - 1)
            intPosition2 = InStr(1, item, strTeamCodeIn)
            If intPosition2 > 0 Then
                bolFoundDup = True
                MsgBox("Found Duplicate School Code: " &
strTeamCodeIn)
            End If
        Next

        If Not bolFoundDup Then
            lstTeam.Items.Add(strRow)
        Else
            lstTeam.Items.Add("DUPLICATE School Code: " & strRow)
            lstTeam.Items.Add("Please correct input file and
reload teams")
            bolEndCode = True
        End If
    Else
        bolEndCode = True
    End If
End If

Loop
'Set focus on the first item
lstTeam.SelectedIndex = 0
End Sub

```

```

Private Sub BtnAddRunners_Click(sender As Object, e As EventArgs) Handles
btnAddRunners.Click

```

```

    'Adding team one by one so I don't have to make a new form :)

```

```

    Dim intPosition As Integer

```

```

    Dim strTeamCodeIn As String

```

```

    Dim bolFoundDup As Boolean = False

```

```

    Dim bolEndCode As Boolean = False

```

```

    Dim strSchool_Code As String = UCase(InputBox("Enter the school
code", "RaceMgr - Add Team"))

```

```

Do While Not bolFoundDup And Not bolEndCode

    For Each item As String In lstTeam.Items
        intPosition = InStr(1, item, "|")
        strTeamCodeIn = Mid(item, 1, intPosition - 1)
        If strTeamCodeIn = strSchool_Code Then
            bolFoundDup = True
            MsgBox("Found Duplicate School Code: " & strTeamCodeIn)
        End If
    Next
    If bolFoundDup Then
        strSchool_Code = UCase(InputBox("Enter a different school
code", "RaceMgr - Add Team"))
        bolFoundDup = False
    Else
        bolEndCode = True
    End If
Loop

    Dim strSchool_Name As String = InputBox("Enter the school name",
"RaceMgr - Add Team")
    Dim strSchool_CoachFname As String = InputBox("Enter the Coach
f-name", "RaceMgr - Add Team")
    Dim strSchool_CoachLname As String = InputBox("Enter the Coach
l-name", "RaceMgr - Add Team")
    Dim strSchool_ADFname As String = InputBox("Enter the AD f-name",
"RaceMgr - Add Team")
    Dim strSchool_ADLname As String = InputBox("Enter the AD l-name",
"RaceMgr - Add Team")
    'Print to list box
    lstTeam.Items.Add(strSchool_Code & "|" & strSchool_Name & "|" &
strSchool_CoachFname & "|" & strSchool_CoachLname & "|" & strSchool_ADFname &
"|" & strSchool_ADLname)
End Sub

Private Sub btnDeleteRunner_Click(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles btnDeleteRunner.Click
    'This routine removes a Team from the list based on the entered Team
Code

```

```

    Dim answer As Integer
    answer = MsgBox("You're about to delete the selected team. Proceed?",
vbQuestion + vbYesNo + vbDefaultButton2, "RaceMgr - Warning")
    If answer = vbYes Then
        'Remove the team from the list
        lstTeam.Items.Remove(lstTeam.SelectedItem)
    End If
End Sub

```

```

Private Sub btnExit_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnExit.Click
    If lstTeam.Items.Count > 0 And frmRM2000.lstPlayers.Items.Count > 0
Then
        frmRM0000.btnRaceMgr.Enabled = True
    Else
        frmRM0000.btnRaceMgr.Enabled = False
    End If
    frmRM0000.Show()
    Me.Hide()
End Sub

```

```

Private Sub frmRM1000_Load(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Load
    If txtFilePath.Text.Trim = "" Then
        txtFilePath.Text = frmRM0000.txtFilePath.Text
    End If
End Sub

```

```

Private Sub frmRM1000_VisibleChanged(ByVal sender As Object, ByVal e As
System.EventArgs) Handles Me.VisibleChanged
    If txtFilePath.Text.Trim = "" Then
        txtFilePath.Text = frmRM0000.txtFilePath.Text
    End If
End Sub
End Sub
End Class

```



```

        strTeamCodeIn = Mid(strRow, 1, intPosition - 1)
        intPosition2 = InStr(1, item, strTeamCodeIn)
        If intPosition2 > 0 Then
            bolFoundDup = True
            MsgBox("Found Duplicate runners BIB: " &
strTeamCodeIn)
        End If

    Next
    If Not bolFoundDup Then
        lstPlayers.Items.Add(strRow)
    Else
        lstPlayers.Items.Add("DUPLICATE runners BIB: " &
strRow)
        lstPlayers.Items.Add("Please correct input file and
reload teams")
        bolEndCode = True
    End If
    Else
        bolEndCode = True
    End If
    End If
    Loop
    'Set focus on the first item
    lstPlayers.SelectedIndex = 0
End Sub

Private Sub btnAddRunners_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnAddRunners.Click
    ' This routine loops through a msg box prompting the user for Bib # |
School Code | Name
    ' You must scan the existing runner's Bib #s for duplicates... Force
the user
    ' to enter a new number
    Dim bolDup As Boolean
    Dim strBIB_Input As String = InputBox("Enter the BIB number",
"RaceMgr - Add Runner")
    Do
        bolDup = False

```

```

    For Each strBIB_Test As String In lstPlayers.Items
        If Equals(Mid(strBIB_Test, 1, 3), strBIB_Input) Then
            bolDup = True
        End If
    Next
    If Not bolDup Then
        Dim strRoster_BIB As String = strBIB_Input
        Dim strRoster_SchoolCode As String = UCase(InputBox("Enter
school code", "RaceMgr Add Runner"))
        Dim strRoster_RunnerFname As String = InputBox("Enter
runner's f-name", "RaceMgr Add Runner")
        Dim strRoster_RunnerLname As String = InputBox("Enter
runner's l-name", "RaceMgr Add Runner")
        lstPlayers.Items.Add(strRoster_BIB & "|" &
strRoster_SchoolCode & "|" & strRoster_RunnerFname & "|" &
strRoster_RunnerLname)
    Else
        strBIB_Input = InputBox("BIB number exist. Please enter a
different BIB number", "RaceMgr - Add Runner")
    End If
    Loop While bolDup
End Sub

```

```

Private Sub btnDeleteRunner_Click(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles btnDeleteRunner.Click
    'This routine removes a runner from the list based on the entered Bib
#... Perform typical validation...
    Dim answer As Integer
    answer = MsgBox("You're about to delete the selected runner.
Proceed?", vbQuestion + vbYesNo + vbDefaultButton2, "RaceMgr - Warning")
    If answer = vbYes Then
        'Remove the team from the list
        lstPlayers.Items.Remove(lstPlayers.SelectedItem)
    End If
End Sub

```

```

Private Sub btnExit_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnExit.Click

```

```

        If frmRM1000.lstTeam.Items.Count > 0 And lstPlayers.Items.Count > 0
Then
            frmRM0000.btnRaceMgr.Enabled = True
        Else
            frmRM0000.btnRaceMgr.Enabled = False
        End If
        frmRM0000.Show()
        Me.Hide()
    End Sub

    Private Sub frmRM2000_Load(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Load
        If txtFilePath.Text.Trim = "" Then
            txtFilePath.Text = frmRM0000.txtFilePath.Text
        End If
    End Sub

    Private Sub frmRM2000_VisibleChanged(ByVal sender As Object, ByVal e As
System.EventArgs) Handles Me.VisibleChanged
        If txtFilePath.Text.Trim = "" Then
            txtFilePath.Text = frmRM0000.txtFilePath.Text
        End If
    End Sub
End Class

```

Appendix C.5 - frmRM3000.vb

Imports System.IO

```
' Shell Author: Bob Desilets
' Modified by: Tien Le
' Module name: frmRM3000
' Last Modified date: 25-April-2020
' Module description: form 3000 time mgr
```

Public Class frmRM3000

```
Private Sub btnExit_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnExit.Click
```

```
    If lstSyncTimeBibs.Items.Count > 0 Then
        frmRM0000.btnResultsMgr.Enabled = True
    Else
        frmRM0000.btnResultsMgr.Enabled = False
    End If
    frmRM0000.Show()
    Me.Hide()
```

End Sub

```
Private Sub btnSyncTimesBibs_Click(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles btnSyncTimesBibs.Click
```

```
    ' This button is disabled until both Times and Bibs have been
entered.
    ' The associated list box is invisible until this button is pressed
    ' This routine merges Position | Time | Bib #
```

```
Dim intPostion As Integer
Dim index As Integer = 0
Dim intPlacing As Integer = 1
```

```
lstSyncTimeBibs.Items.Clear()
For Each item As String In lstTimeEntry.Items
    Dim strRunner As String = "Runner Not Found"
```

```

Dim strSchool As String = "School Not Found"

lstBibs.SelectedIndex = index
intPostion = InStr(lstBibs.SelectedItem, "- ")
strRunner = Trim(Mid(lstBibs.SelectedItem, intPostion + 2))
' Find School and Runners by stepping through lstPlayers
For Each item2 As String In frmRM2000.lstPlayers.Items
    ' Sample row layout -- lstRoster.Items.Add("A-SHS")
    If strRunner = Mid(item2, 1, 3) Then
        strSchool = Mid(item2, 5)
    End If
Next
lstSyncTimeBibs.Items.Add(intPlacing & " - " & item & " - " &
strRunner & " - " & strSchool)
index += 1
intPlacing += 1
Me.Refresh()
Next
End Sub

Private Sub btnEnterResults_Click(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles btnEnterResults.Click
    'Load time button
    Dim textIn As StreamReader = New StreamReader(New
FileStream(txtFilePath.Text, FileMode.OpenOrCreate, FileAccess.Read))

    Dim strRow As String
    Dim bolFoundCode As Boolean = False

    'Clear Team listbox
    lstTimeEntry.Items.Clear()

    Do While textIn.Peek <> -1
        Me.Refresh()
        strRow = textIn.ReadLine.Trim
        If Not bolFoundCode Then
            If "# TIME FILE" = UCase(Mid(strRow, 1, 11)) Then
                bolFoundCode = True
            End If
        End If
    End While

```

```

        Else
            If Mid(strRow, 1, 2) <> "# " Then
                lstTimeEntry.Items.Add(strRow)
            End If
        End If
    Loop
    'Set focus on the first item
    lstTimeEntry.SelectedIndex = 0

    'Check if it's sync-able
    If lstTimeEntry.Items.Count > 0 And lstBibs.Items.Count > 0 Then
        btnSyncTimesBibs.Enabled = True
    Else
        btnSyncTimesBibs.Enabled = False
    End If
End Sub

Private Sub txtFilePath_TextChanged(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles txtFilePath.TextChanged
    If txtFilePath.Text.Length > 0 Then
        btnEnterResults.Enabled = True
    Else
        btnEnterResults.Enabled = False
    End If
End Sub

Private Sub btnEnterBib_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles btnEnterBib.Click
    'Enter Bib one by one.
    Dim strInput As String
    Dim boldDup As Boolean
    Dim intStart As Integer
    Dim strTest As String
    'Clear Bib list
    lstBibs.Items.Clear()
    For index As Integer = 1 To lstTimeEntry.Items.Count
        strInput = InputBox("Enter the BIB for position #" & index, "Race Mgr Enter BIB")
        Do

```



```

        bolDup = False
        For Each strBIB_Test As String In lstBibs.Items
            intStart = InStr(1, strBIB_Test, "-")
            strTest = Mid(strBIB_Test, intStart + 2, 3)
            'lstBibs.Items.Add(strTest)
            If strTest = strInput Then
                bolDup = True
            End If
        Next
        If Not bolDup Then
            lstBibs.Items.Add(index & " - " & strInput)
        Else
            strInput = InputBox("Enter a different BIB for position
number " & index, "Race Mgr Enter BIB")
        End If
    Loop While bolDup
Next

'Set focus on the first item
lstBibs.SelectedIndex = 0
'Check if it's sync-able
If lstTimeEntry.Items.Count > 0 And lstBibs.Items.Count > 0 Then
    btnSyncTimesBibs.Enabled = True
Else
    btnSyncTimesBibs.Enabled = False
End If
End Sub

```

```

Private Sub BtnBibAuto_Click(sender As Object, e As EventArgs) Handles
btnBibAuto.Click

```

```

    Dim strPath As String = "C:\Bob\BIBPositions.txt"

```

```

    Dim strRow As String
    Dim bolFoundCode As Boolean = False
    Dim intCounter As Integer = 1
    Dim intStart As Integer
    Dim strTest As String
    Dim arrCheck(10000) As String
    Dim index As Integer = 0

```

```
Dim textIn As StreamReader = New StreamReader(New FileStream(strPath,
    FileMode.OpenOrCreate, FileAccess.Read))
```

```
Do While textIn.Peek <> -1
    Me.Refresh()
    strRow = textIn.ReadLine.Trim
    arrCheck(index) = Mid(strRow, 1, 3)
    index += 1
Loop
```

```
Dim numCheck As Integer = 0
```

```
For i As Integer = 0 To arrCheck.Length - 1
    If Not arrCheck(i) Is Nothing Then
        Dim l As Integer = Array.LastIndexOf(arrCheck, arrCheck(i))
        If l <> i Then
            numCheck += 1
        End If
    End If
Next
```

```
Dim textIn2 As StreamReader = New StreamReader(New
    FileStream(strPath, FileMode.OpenOrCreate, FileAccess.Read))
```

```
If numCheck <> 0 Then
    lstBibs.Items.Clear()
    lstBibs.Items.Add("FOUND DUPLICATE")
    lstBibs.Items.Add("PLEASE FIX INPUT FILE")
Else
    'Add all lines to lstbox
    Do While textIn2.Peek <> -1
        Me.Refresh()
        strRow = textIn2.ReadLine.Trim
        lstBibs.Items.Add(intCounter & " - " & Mid(strRow, 1, 3))
        intCounter += 1
    Loop
End If
```

```
'Set focus on the first item
lstBibs.SelectedIndex = 0

'Check if it's sync-able
If lstTimeEntry.Items.Count > 0 And lstBibs.Items.Count > 0 Then
    btnSyncTimesBibs.Enabled = True
Else
    btnSyncTimesBibs.Enabled = False
End If
End Sub
End Class
```

Appendix C.6 - frmRM4000.vb

```
Imports System.IO
```

```
' Shell Author: Bob Desilets
' Modified by: Tien Le
' Module name: frmRM4000
' Last Modified date: 25-April-2020
' Module description: form 4000 result mgr
```

```
Public Class frmRM4000
```

```
    Private Sub btnExit_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnExit.Click
        frmRM0000.Show()
        Me.Hide()
    End Sub
```

```
    Private Sub btnCalculateResults_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles btnCalculateResults.Click
        'Calculate the result

        'Enable the Archive button
        btnArchive.Enabled = True
        'Clear the list box
        lstTeamResults.Items.Clear()

        Dim strDayTime As String = Format(Now, "General Date")
        Dim strFullName As String = "Tien Le's Race Manager - CIS 223"
        Dim strOneTab As String = "      "
        Dim strFiveTab As String = "                "
        Dim strResultLine As String
        Dim index As Integer = 0
        Dim intPositionStart As Integer
        Dim intPositionEnd As Integer
        Dim intPostitionTest As Integer
        Dim intPoints(7) As Integer
        Dim intTotalPoints As Integer = 0
```

```

Dim strPosition As String
Dim strTime As String
Dim strBIB As String
Dim strSchool As String
Dim strRunnerFname As String
Dim strRunnerLname As String
For Each str1000_item As String In frmRM1000.lstTeam.Items
    'Outer loop
    Dim str1000_SchoolCode As String = Trim(Mid(str1000_item, 1,
InStr(1, str1000_item, "|") - 1))
    For Each str3000_item As String In
frmRM3000.lstSyncTimeBibs.Items
        'Inner loop
        'Find the vertical bar
        intPositionEnd = InStr(1, str3000_item, "|")
        'Find the 3rd (-) sign
        intPositionStart = InStr(1, str3000_item, "-")
        intPostitionTest = InStr(intPositionStart + 1, str3000_item,
"-")
        intPositionStart = InStr(intPostitionTest + 1, str3000_item,
"-")

        intPositionStart += 2
        'Copy the school code from (index) of SYNC listbox
        Dim str3000_SchoolCode As String = Trim(Mid(str3000_item,
intPositionStart, intPositionEnd - intPositionStart))
        'Check for if it's the same school
        If str1000_SchoolCode = str3000_SchoolCode Then
            'Add point to it if it's the same school
            intPoints(index) = Convert.ToInt32(Mid(str3000_item, 1,
2))

            If index < 5 Then
                intTotalPoints += intPoints(index)
            End If
            index += 1
        End If
    Next

    'Default spacing
    Dim strSpace As String = "      "

```

```

If str1000_SchoolCode.Trim.Length = 3 Then
    strSpace = "          "
ElseIf str1000_SchoolCode.Trim.Length = 4 Then
    strSpace = "        "
ElseIf str1000_SchoolCode.Trim.Length = 5 Then
    strSpace = "      "
End If

If intTotalPoints > 0 And index = 7 Then
    'Seven Runners
    strResultLine = $"{intTotalPoints:D6}
{str1000_SchoolCode}{strSpace}{intPoints(0):D3}    {intPoints(1):D3}
{intPoints(2):D3}    {intPoints(3):D3}    {intPoints(4):D3}
{intPoints(5):D3}    {intPoints(6):D3}"
    lstTeamResults.Items.Add(strResultLine)
End If

If intTotalPoints > 0 And index = 6 Then
    'Six Runners
    strResultLine = $"{intTotalPoints:D6}
{str1000_SchoolCode}{strSpace}{intPoints(0):D3}    {intPoints(1):D3}
{intPoints(2):D3}    {intPoints(3):D3}    {intPoints(4):D3}
{intPoints(5):D3}    ---"
    lstTeamResults.Items.Add(strResultLine)
End If

If intTotalPoints > 0 And index = 5 Then
    'Five Runners
    strResultLine = $"{intTotalPoints:D6}
{str1000_SchoolCode}{strSpace}{intPoints(0):D3}    {intPoints(1):D3}
{intPoints(2):D3}    {intPoints(3):D3}    {intPoints(4):D3}    ---    ---"
    lstTeamResults.Items.Add(strResultLine)
End If

'Reset index and all values
intTotalPoints = 0
intPoints(0) = 0
intPoints(1) = 0
intPoints(2) = 0

```



```

        intPoints(3) = 0
        intPoints(4) = 0
        intPoints(5) = 0
        intPoints(6) = 0
        index = 0
    Next

    ' Sort all items added previously.
    lstTeamResults.Sorted = True
    ' Stop sorting all items
    lstTeamResults.Sorted = False

    'Adding the labels
    lstTeamResults.Items.Insert(0, strFullName & strFiveTab & strDayTime)
    lstTeamResults.Items.Insert(1, "")
    lstTeamResults.Items.Insert(2, strFiveTab & "      T E A M   R E S U
L T S")
    lstTeamResults.Items.Insert(3, "Points" & strOneTab & "Team Code" &
strOneTab & "P-1" & strOneTab & "P-2" &
                                strOneTab & "P-3" & strOneTab & "P-4" &
strOneTab & "P-5" & strOneTab & "P-6" & strOneTab & "P-7")
    lstTeamResults.Items.Add("")
    lstTeamResults.Items.Add(strFiveTab & "I N D I V I D U A L   R E S U
L T S")
    lstTeamResults.Items.Add("Position" & strOneTab & "   Time   " &
strOneTab &
                                "BIB" & strOneTab & "School" & strOneTab &
"Runner")

    'Getting information from frmRM3000 lstSync
    For Each str3000_item As String In frmRM3000.lstSyncTimeBibs.Items
        intPositionStart = 1
        intPositionEnd = InStr(intPositionStart, str3000_item, "-")
        strPosition = Mid(str3000_item, intPositionStart, 2)

        intPositionStart = intPositionEnd + 2
        intPositionEnd = InStr(intPositionStart, str3000_item, "-")
        strTime = Mid(str3000_item, intPositionStart, 8)
    
```

```

    intPositionStart = intPositionEnd + 2
    intPositionEnd = InStr(intPositionStart, str3000_item, "-")
    strBIB = Mid(str3000_item, intPositionStart, 3)

    intPositionStart = intPositionEnd + 2
    intPositionEnd = InStr(intPositionStart, str3000_item, "|")
    strSchool = Mid(str3000_item, intPositionStart, intPositionEnd -
intPositionStart)

    intPositionStart = intPositionEnd + 1
    intPositionEnd = InStr(intPositionStart, str3000_item, "|")
    strRunnerFname = Mid(str3000_item, intPositionStart,
intPositionEnd - intPositionStart)

    intPositionStart = intPositionEnd + 1
    intPositionEnd = InStr(intPositionStart, str3000_item, "|")
    strRunnerLname = Mid(str3000_item, intPositionStart)

    'Default spacing
    Dim strSpace As String = "      "

    If strSchool.Trim.Length = 3 Then
        strSpace = "      "
    ElseIf strSchool.Trim.Length = 4 Then
        strSpace = "      "
    ElseIf strSchool.Trim.Length = 5 Then
        strSpace = "      "
    End If

    strResultLine = $"      {strPosition}      {strTime}      {strBIB}
{strSchool}{strSpace}{strRunnerFname} {strRunnerLname}"
    lstTeamResults.Items.Add(strResultLine)
Next

End Sub

Private Sub btnArchive_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnArchive.Click
    ' Create new file.

```

```
Dim strPath As String = "C:\Bob\RaceMgr-Result_TienLe.txt"
Using writer As StreamWriter =
    New StreamWriter(strPath)
    For Each strRow As String In lstTeamResults.Items
        writer.WriteLine(strRow)
    Next
End Using
MsgBox("Successfullly created C:\Bob\RaceMgr-Result_TienLe.txt")
End Sub
End Class
```

Appendix C.7 - RosterLoad.txt

```
# School [School Code|School Name|Coach F-Name|Coach L-Name|AD F-Name|AD
L-Name]
WSHS|Worcester South High School|Glenn|Clauss|Bret|Zane
WDHS|Worcester Dorehty High School|Ellsworth|Quackenbush|Bert|Coco
WBCHS|Worcester Burncoat High School|Gail|Cain|Kevin|Kane
QRHS|Quabbin Regional High School|Bob|Desilets|Seth|Desilets
GHS|Gardner High School|Jack|Smith|George|Fanning
NBHS|North Brookfield High School|Hughe|Fitch|Richard|Carey
WHS|Winchendon High School|Bill|Nice|Sam|Adams
AUBHS|Auburn High School|Katie|Right|Alice|Wonderland
OXHS|Oxford High School|Mary|Cousin|Frank|Daughter
# Roster [Bib|School Code|Runner's F-Name|Runner's L-Name]
101|WSHS|Sanora|Hibshman
102|WSHS|Bridgette|Moffitt
103|WSHS|Karine|Chunn
104|WSHS|Shanita|Wind
105|WSHS|Fernanda|Parsell
106|WSHS|Albertha|Baringer
107|WSHS|Carlee|Sowards
108|WDHS|Maisha|Kleis
109|WDHS|Lezlie|Berson
110|WDHS|Deane|Rocheleau
111|WDHS|Hang|Hodapp
112|WDHS|Zola|Dorrough
113|WDHS|Shalon|Mcmonigle
114|WBCHS|Valentine|Vant
115|WBCHS|Renate|Deforge
116|WBCHS|Yung|Corner
117|WBCHS|Eleanore|Younkin
118|WBCHS|Alexia|Fandel
119|WBCHS|Aleida|Silman
120|WBCHS|My|Dobyns
121|QRHS|Kelley|Barela
122|QRHS|Tatyana|Thornley
123|QRHS|Diedre|Hake
124|QRHS|Krysta|Sweet
```

125|QRHS|Sheri|Wahlgren
126|QRHS|Brittney|Tovey
127|QRHS|Tuyet|Manfre
128|GHS|Jayna|Laurent
129|GHS|Anastasia|Noles
130|GHS|Rhiannon|Estrello
131|GHS|Katy|Dent
132|GHS|Jolynn|Salone
133|GHS|Johnie|Rasmus
134|GHS|Tashia|Schlick
135|NBHS|Octavia|Gildea
136|NBHS|Charlene|Heredia
137|NBHS|Reina|Tatem
138|NBHS|Dong|Factor
139|NBHS|Jeniffer|Bichrest
140|WHS|Charlotte|Clutter
141|WHS|Alaine|Chowning
142|WHS|Audie|Couse
143|WHS|Madelaine|Lightbody
144|WHS|Nery|Shaw
145|WHS|Milda|Auxier
146|WHS|Beatriz|Embury
147|AUBHS|Shanda|Walquist
148|AUBHS|Felipa|Gillen
149|AUBHS|Kena|Launer
150|AUBHS|Tatum|Hoppe
151|AUBHS|Lura|Mccants
152|AUBHS|Racquel|Spengler
153|AUBHS|Lizbeth|Grauburger
154|OXHS|Teena|Cogliano
155|OXHS|Lorilee|Nelsen
156|OXHS|Lasandra|Clauson
157|OXHS|Kirstie|Soluri
158|OXHS|Noriko|Bones
159|OXHS|Sherika|Gordan
160|OXHS|Cherry|Robotham

Appendix C.8 - TimeFile.txt

Time File

18:29.17
18:54.29
18:54.48
19:18.24
19:23.10
19:26.82
19:32.23
19:42.43
19:50.70
19:55.82
20:16.08
20:32.97
20:33.22
20:53.83
21:02.59
21:16.38
21:21.08
21:31.48
21:51.19
22:01.83
22:10.93
22:11.91
22:16.62
22:18.29
22:19.16
22:20.54
22:21.40
22:25.68
22:50.11
22:57.76
23:04.07
23:04.54
23:07.77
23:23.39
23:24.64

23:28.49
23:28.81
23:29.08
23:54.10
23:55.36
24:15.87
24:16.17
24:24.64
24:25.54
24:27.74
24:34.66
24:35.33
24:39.30
25:14.75
25:25.87
25:43.87
26:03.25
26:34.07
26:36.04
26:38.13
26:46.89
27:14.52
27:57.58
28:00.53
28:01.24

Appendix C.9 - BIBPositions.txt

135|NBHS|Octavia|Gildea
104|WSHS|Shanita|Wind
102|WSHS|Bridgette|Moffitt
142|WHS|Audie|Couse
119|WBCHS|Aleida|Silman
111|WDHS|Hang|Hodapp
125|QRHS|Sheri|Wahlgren
147|AUBHS|Shanda|Walquist
160|OXHS|Cherry|Robotham
108|WDHS|Maisha|Kleis
130|GHS|Rhiannon|Estrello
117|WBCHS|Eleanore|Younkin
132|GHS|Jolynn|Salone
140|WHS|Charlotte|Clutter
154|OXHS|Teena|Cogliano
120|WBCHS|My|Dobyns
126|QRHS|Brittney|Tovey
128|GHS|Jayna|Laurent
115|WBCHS|Renate|Deforge
152|AUBHS|Racquel|Spengler
121|QRHS|Kelley|Barela
110|WDHS|Deane|Rocheleau
103|WSHS|Karine|Chunn
151|AUBHS|Lura|Mccants
158|OXHS|Noriko|Bones
114|WBCHS|Valentine|Vant
139|NBHS|Jeniffer|Bichrest
149|AUBHS|Kena|Launer
122|QRHS|Tatyana|Thornley
146|WHS|Beatriz|Embury
150|AUBHS|Tatum|Hoppe
157|OXHS|Kirstie|Soluri
127|QRHS|Tuyet|Manfre
124|QRHS|Krysta|Sweet
143|WHS|Madelaine|Lightbody
144|WHS|Nery|Shaw

155|OXHS|Lorilee|Nelsen
136|NBHS|Charlene|Heredia
148|AUBHS|Felipa|Gillen
159|OXHS|Sherika|Gordan
113|WDHS|Shalon|Mcmonigle
138|NBHS|Dong|Factor
106|WSHS|Albertha|Baringer
105|WSHS|Fernanda|Parsell
133|GHS|Johnie|Rasmus
134|GHS|Tashia|Schlick
156|OXHS|Lasandra|Clauson
153|AUBHS|Lizbeth|Grauburger
129|GHS|Anastasia|Noles
137|NBHS|Reina|Tatem
131|GHS|Katy|Dent
118|WBCHS|Alexia|Fandel
109|WDHS|Lezlie|Berson
101|WSHS|Sanora|Hibshman
123|QRHS|Diedre|Hake
107|WSHS|Carlee|Sowards
141|WHS|Alaine|Chowning
112|WDHS|Zola|Dorrough
116|WBCHS|Yung|Corner
145|WHS|Milda|Auxier

Appendix C.10 - RosterLoadshort.txt

```
# School [School Code|School Name|Coach F-Name|Coach L-Name|AD F-Name|AD
L-Name]
WSHS|Worcester South High School|Glenn|Clauss|Bret|Zane
WDHS|Worcester Dorehty High School|Ellsworth|Quackenbush|Bert|Coco
WBCHS|Worcester Burncoat High School|Gail|Cain|Kevin|Kane
QRHS|Quabbin Regional High School|Bob|Desilets|Seth|Desilets
GHS|Gardner High School|Jack|Smith|George|Fanning
NBHS|North Brookfield High School|Hughe|Fitch|Richard|Carey
WHS|Winchendon High School|Bill|Nice|Sam|Adams
AUBHS|Auburn High School|Katie|Right|Alice|Wonderland
OXHS|Oxford High School|Mary|Cousin|Frank|Daughter
# Roster [Bib #|School Code|Runner's F-Name|Runner's L-Name]
101|WSHS|Sanora|Hibshman
102|WSHS|Bridgette|Moffitt
103|WSHS|Karine|Chunn
104|WSHS|Shanita|Wind
105|WSHS|Fernanda|Parsell
106|WSHS|Albertha|Baringer
107|WSHS|Carlee|Sowards
108|WDHS|Maisha|Kleis
109|WDHS|Lezlie|Berson
110|WDHS|Deane|Rocheleau
111|WDHS|Hang|Hodapp
112|WDHS|Zola|Dorrrough
113|WDHS|Shalon|Mcmonigle
```

Appendix C.11 - TimeFilesshort.txt

Time File

18:29.17
 18:54.29
 18:54.48
 19:18.24
 19:23.10
 19:26.82
 19:32.23
 19:42.43
 19:50.70
 19:55.82
 20:16.08
 20:32.97
 20:33.22

Appendix C.12 - RaceMgr-Result_TienLe.txt

Tien Le's Race Manager - CIS 223

29-Apr-20 3:54:35 PM

		T E A M R E S U L T S						
Points	Team Code	P-1	P-2	P-3	P-4	P-5	P-6	P-7
000078	WBCHS	005	012	016	019	026	052	059
000107	QRHS	007	017	021	029	033	034	055
000111	AUBHS	008	020	024	028	031	039	048
000115	WSHS	002	003	023	043	044	054	056
000118	OXHS	009	015	025	032	037	040	047
000119	WHS	004	014	030	035	036	057	060
000132	WDHS	006	010	022	041	053	058	---
000133	GHS	011	013	018	045	046	049	051
000158	NBHS	001	027	038	042	050	---	---

		I N D I V I D U A L R E S U L T S		
Position	Time	BIB	School	Runner
1	18:29.17	135	NBHS	Octavia Gildea
2	18:54.29	104	WSHS	Shanita Wind
3	18:54.48	102	WSHS	Bridgette Moffitt

4	19:18.24	142	WHS	Audie Couse
5	19:23.10	119	WBCHS	Aleida Silman
6	19:26.82	111	WDHS	Hang Hodapp
7	19:32.23	125	QRHS	Sheri Wahlgren
8	19:42.43	147	AUBHS	Shanda Walquist
9	19:50.70	160	OXHS	Cherry Robotham
10	19:55.82	108	WDHS	Maisha Kleis
11	20:16.08	130	GHS	Rhiannon Estrello
12	20:32.97	117	WBCHS	Eleanore Younkin
13	20:33.22	132	GHS	Jolynn Salone
14	20:53.83	140	WHS	Charlotte Clutter
15	21:02.59	154	OXHS	Teena Cogliano
16	21:16.38	120	WBCHS	My Dobyns
17	21:21.08	126	QRHS	Brittney Tovey
18	21:31.48	128	GHS	Jayna Laurent
19	21:51.19	115	WBCHS	Renate Deforge
20	22:01.83	152	AUBHS	Racquel Spengler
21	22:10.93	121	QRHS	Kelley Barela
22	22:11.91	110	WDHS	Deane Rocheleau
23	22:16.62	103	WSHS	Karine Chunn
24	22:18.29	151	AUBHS	Lura Mccants
25	22:19.16	158	OXHS	Noriko Bones
26	22:20.54	114	WBCHS	Valentine Vant
27	22:21.40	139	NBHS	Jeniffer Bichrest
28	22:25.68	149	AUBHS	Kena Launer
29	22:50.11	122	QRHS	Tatyana Thornley
30	22:57.76	146	WHS	Beatriz Embury
31	23:04.07	150	AUBHS	Tatum Hoppe
32	23:04.54	157	OXHS	Kirstie Soluri
33	23:07.77	127	QRHS	Tuyet Manfre
34	23:23.39	124	QRHS	Krysta Sweet
35	23:24.64	143	WHS	Madelaine Lightbody
36	23:28.49	144	WHS	Nery Shawl
37	23:28.81	155	OXHS	Lorilee Nelsen
38	23:29.08	136	NBHS	Charlene Heredia
39	23:54.10	148	AUBHS	Felipa Gillen
40	23:55.36	159	OXHS	Sherika Gordan
41	24:15.87	113	WDHS	Shalon Mcmonigle
42	24:16.17	138	NBHS	Dong Factor

43	24:24.64	106	WSHS	Albertha Baringer
44	24:25.54	105	WSHS	Fernanda Parsell
45	24:27.74	133	GHS	Johnie Rasmus
46	24:34.66	134	GHS	Tashia Schlick
47	24:35.33	156	OXHS	Lasandra Clauson
48	24:39.30	153	AUBHS	Lizbeth Grauberger
49	25:14.75	129	GHS	Anastasia Noles
50	25:25.87	137	NBHS	Reina Tatem
51	25:43.87	131	GHS	Katy Dent
52	26:03.25	118	WBCHS	Alexia Fandel
53	26:34.07	109	WDHS	Lezlie Berson
54	26:36.04	101	WSHS	Sanora Hibshman
55	26:38.13	123	QRHS	Diedre Hake
56	26:46.89	107	WSHS	Carlee Sowards
57	27:14.52	141	WHS	Alaine Chowning
58	27:57.58	112	WDHS	Zola Dorrough
59	28:00.53	116	WBCHS	Yung Corner
60	28:01.24	145	WHS	Milda Auxier