

Track and Field Meet Manager

By

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University of Cincinnati
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Acknowledgements/Dedication

This project is dedicated to my parents. Without their love and guidance, this project would not be possible.

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Abstract

The Track and Field Meet Manager is an application designed to aid in planning a track meet and keeping the results of those meets organized. For years the track and field coaches at Elder High School have labored over manually creating lineup sheets, recording performance results, and adding scores with a calculator or in their head. The purpose of this application is to consolidate several steps a coach must take to adequately prepare for and record results of their team's performances. With the Track and Field Meet Manager those laborious steps are simplified and may be accomplished with the stroke of the keyboard or the click of a mouse. The Track and Field Meet Manager provides all the tools necessary to organize your team for a track and field meet. Combining a simple user interface with the portability of an access database there is no reason every track and field coach's laptop should be without this application. From creating lineup sheets to tallying up scores, this application will cover the meet from beginning to end leaving the coach with more time to help the athletes perform at their best. The Track and Field Meet Manager is a complete record keeping tool for any coach who wishes to speed up the process of organizing and scoring a track meet.

Track and Field Meet Manager

1. Statement of the Problem

For years coaches at Elder High School have labored over manually recording performance results and adding scores with a calculator or in their head. Currently, lineup sheets are created by hand and copied on a copy machine to be distributed among the athletes. These sheets are difficult to read and are often times lost or misplaced. Results sheets are also hand written or recorded on excel spreadsheets. One coach has over one hundred excel files each named after individual meets that he has scores for. After the meets are over the coaches gather at the finish line to tally up the scores in their heads. The sheets are passed to two or three coaches to check for accuracy before the final scores are determined. They have no way to speed up this process while still maintaining accuracy.

2. Description of the Solution

The Track and Field Meet Manager is a complete record keeping tool for any coach who wishes to speed up the process of organizing and ultimately scoring a track meet. Combining a simple user interface with the portability of an access database there is no reason every track and field coach's laptop should be without this application. The evening before a meet a coach will simply fill out an electronic lineup sheet for distribution to each participating athlete. From this lineup the meet may be scored and recorded by simply entering the results into the application. The application will take

care of scoring and recording the results. The results then may be printed in a number of forms for analysis and distribution.

2.1 User Profile

The intended users for the Track and Field Meet Manager will be at various levels of IT literacy. The Manager is written for use by people possessing basic levels of IT skills. In other words, you do not need to be an IT wizard to use Track and Field Meet Manager. The groups of people that may use the Manager are coaches, non-participating athletes, and meet volunteers.

2.1.1 Coaches

Track and Field coaches have a difficult enough time managing the athletes on the team without having to manage all of the lineups and results. However, the coach must organize their teams in advance of the meet itself. They must predetermine who will perform best at each event and enter the athlete into the event. A lineup sheet is produced and distributed to each athlete participating in the meet. From that lineup sheet the coach will record performances of each athlete in each event. Each coach has a different level of experience using computers. All the coaches at Elder High School are teachers of various subjects. They all own laptops and possess the ability to navigate through windows and use email. Essentially, they all have basic computer skills.

2.1.2 Non-Participating Athletes and Meet Volunteers

Non-participating athletes and volunteers have similar roles in a typical track meet. When it comes to recording performances non-participating athletes and volunteers are crucial. This group of people both times performances and also records the performances. They run sheets of paper with participating athletes and their respective time and or results from the finish line or place of competition up to the press box or wherever they may be scoring the meet. Volunteers may at some point come in contact with or be in charge of scoring the meet and or events. With volunteers changing from meet to meet it will not be known the skill level of each. A basic understanding of typing and simple navigation skills are assumed.

2.2 Design Protocols

I plan to use two technologies to complete this project. Programming and database design will be my main focus.

2.2.1 Microsoft Access Database

The database for this project will be created in Microsoft Access. Access provides a medium level of sophistication, and is easy to use and maintain. With Microsoft Access I will be able to run this database using minimal resources. I will create multiple tables and link those tables together to provide a very stable backbone.

The user interface will also be created using Microsoft Access. The tools contained within Microsoft Access will allow for the creation of a simple and user-friendly design. Access provides the ability to create multiple forms and use those forms together at the forefront of this application.

Using Access for both the database and the user interface will allow for seamless integration between the two. The implementation of an Access database on a Windows operating system will ensure full compatibility with each of the user's laptops.

2.2.2 Microsoft Visual Basic for Applications

Programming for this application will be used to automate entry and retrieval of information as well as for navigation. With regards to input and output, simple queries will be useful, but not without modification. Complex SQL statements will be used in conjunction with information taken from each form to dynamically enter and retrieve information. That information will be further manipulated and displayed using visual basic.

Programming will be used to populate selection boxes located within the setup wizard. Text boxes or combo boxes will be used to query information which will dictate what information will be displayed or printed. These selection boxes are used to dynamically create meets from scratch using existing information on schools and teams. These boxes will update themselves within the wizard using the same programming techniques. For example, I will be able to

carry a unique ID from form to form throughout this process as well to ensure the correct data is associated with the correct meet and vice versa.

As for navigation throughout the application, command buttons and text boxes will be utilized a great deal for these tasks. These objects will be placed on Access forms designed and created with ease of use in high priority.

2.3 Interface Design

2.3.1 Welcome Screen

This is the main page of the application. From this page the user will be able to make the choice as to which utility they would like to use. They will have the choice to create a lineup sheet, set up a track meet, enter results of a track meet or lineup, and/or print out results of a track meet.

2.3.2 Lineup Sheet Utility

The interface for the lineup sheet utility will be formatted similarly to the way the coaches create them manually. Each event will be listed according to the standard order of events and separated as either a running event or a field event. Text boxes will be used to enter in the names of the athletes. These names will be stored in a database for result entry at a later time.

2.3.3 Create a Track Meet Utility

This utility will come in the form of a wizard. The user will first enter the name, location, and date of the meet. On the next screen the user will add participating schools to the meet by choosing schools from a master list and

adding them to the list of participating schools. After creating this list the user will be taken to the next screen where they will be prompted to create a lineup for each team that is participating. Using these lineup sheets the meet will be recorded manually and scored automatically.

2.3.4 Enter Results for a Track Meet or Lineup Sheet Utility

This utility will take you to the lineup sheet that the user has already created. They will have the option to choose if they would like to score the entire meet or simply enter the scores for a single team. After choosing, the scoring or result entry screen will appear for manual entry into designated text boxes.

2.3.5 Print Results Utility

The interface for this utility will contain various command buttons which will all print out results sheets. This utility will print out individual results, team results; meet results, or performance results.

2.4 Database Design

The database contains the following tables with the following relationships:

2.4.1 Database Tables

<u>Meets</u>	<u>MeetSchools</u>	<u>Schools</u>
MeetName	MeetID	SchoolID
MeetDate	SchoolID	SchoolName
MeetLocation		SchoolCity
		SchoolState
		SchoolLeague
<u>Athletes</u>	<u>Performances</u>	<u>Events</u>
AthleteID	PerformanceID	EventID
AthleteLastName	EventID	EventName
AthleteFirstName	PerformanceDate	
SchoolID	MeetID	
	AthleteID	
	Performance	

Figure 1: Database Tables

2.4.2 Database Relationships

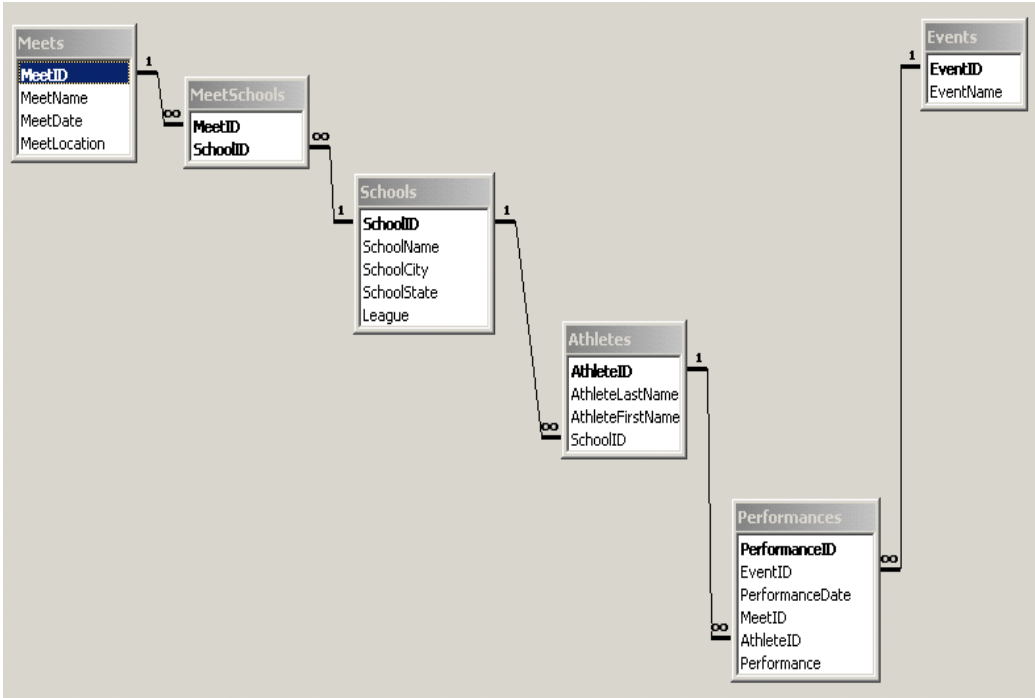


Figure 2: Database Relationships

3. Deliverables

1. A Track and Field Meet Manager Application is developed.
2. Microsoft Access is used in the creation and maintenance of the database as well as creation and maintenance of the user interface.
3. Visual Basic for Applications is utilized to manipulate information and provide navigation.
4. Complex SQL statements are utilized to dynamically query information to objects on forms.
5. Objects on forms will allow the user to choose criteria throughout the application which will have an effect on what is displayed or printed.
6. Users of the Track and Field Meet Manager will have the following utilities at their disposal:
 - a. Create team lineup
 - i. Enter athletes into a form
 - ii. Print the form for distribution
 - b. Create and score a track and field meet
 - i. Use a wizard to fill information about meet
 - ii. Includes information for schools, athletes, and events in meet
 - iii. Score the track meet
 - c. Enter team results and scores
 - i. Choose meet and team from a list and manually enter results
 - ii. Score the meet from the entered results

- d. Print meet results
 - i. Print results based on chosen criteria
- 7. Users of the Track and Field meet manager will be able to run this application using limited resources.
- 8. This application will be used by track and field coaches to aid in the time consuming responsibilities involved in coaching track and field.

4. Design and Development

This section describes the timeline, budget, and requirements of this project.

4.1 Timeline

Senior Design 1 – Spring 2003

Weeks 1-5

- Gather information and pinpoint individual tasks to automate
- Create basic layout of database on paper
- Create basic layout of user interface

Weeks 6-10

- Continue to modify database design and table contents
- Continue to modify user interface

Senior Design 2 – Winter 2004

Weeks 1-5

- Finalize database design and table contents
- Finalize design of user interface
- Begin documentation

Weeks 6-10

- Begin testing prototype
- Finalize documentation including design freeze
- Present working prototype

Senior Design 3 – Spring 2004

Weeks 1-5

- Complete prototype
- Complete testing and troubleshooting
- Submit preliminary documentation

May 27, 2004

- Present Final Project

June 3, 2004

- Submit Final Documentation

4.2 Software and Hardware Requirements

4.2.1 Software Requirements (Minimum)

- Microsoft Windows 2000 Pro

- Microsoft Access 2000

4.2.2 Hardware Requirements (Minimum)

- PC or Laptop with at least 233 MHz processor
- At least 128 MB memory
- Mouse and Keyboard
- Printer

4.3 Budget

Item	Cost
Development Budget	
Dell Dimension 4800	\$1,200.00
Microsoft Windows XP Professional*	\$276.97
Microsoft Office XP Professional*	\$459.71
Development Total	\$1,936.68
Production Budget	
Dell Computer meeting min. requirements**	\$499.99
- Includes operating system	
Microsoft Access 2003***	\$228.00
Hewlett Packard Inkjet Printer*	\$39.99
Production Total	\$767.98
PROJECT TOTAL	\$1,504.66
* Price found at www.cdw.com	
** Price found at www.dell.com	
***Price found at www.officedepot.com	

Figure 3: Budget Table

5. Proof of Design

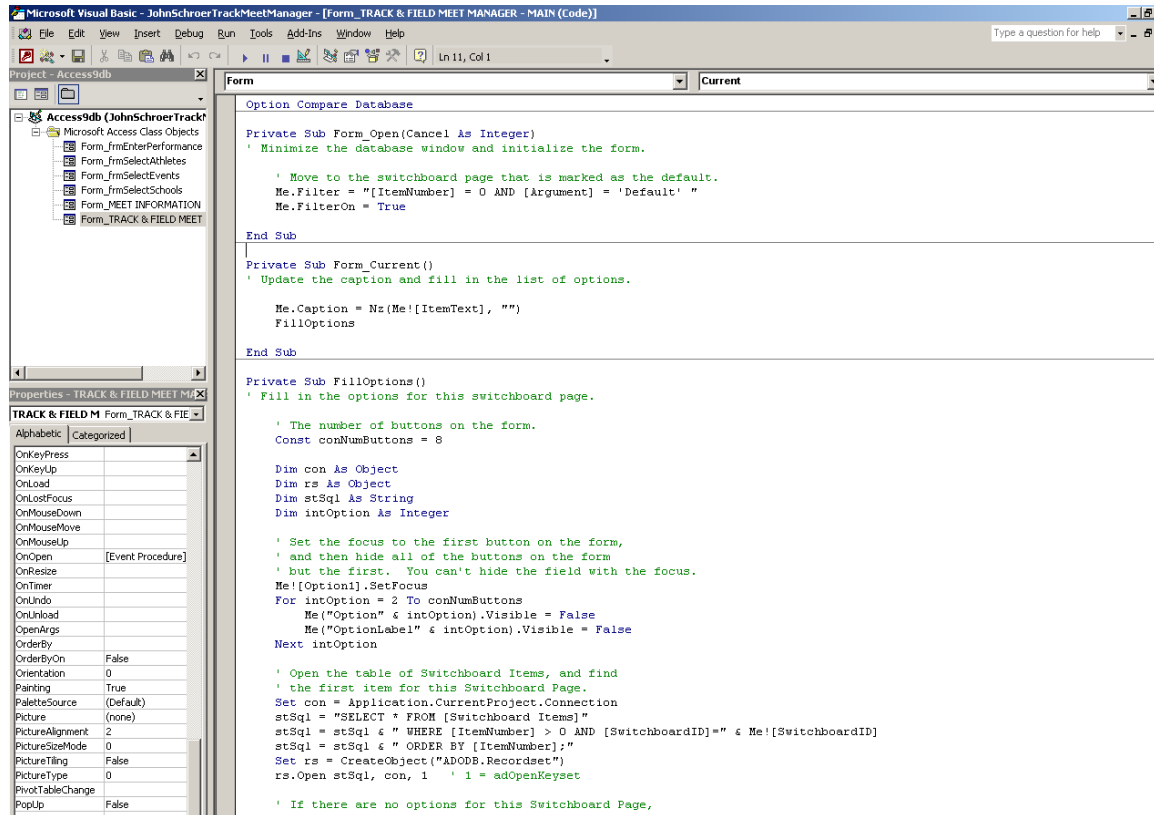
This section shows in detail how the deliverables of this project were accomplished.

5.1 A Track and Field Meet Manager Application is developed.



Figure 4: Welcome Screen

5.2 Visual Basic for Applications is utilized to manipulate information and provide navigation.



```
Option Compare Database

Private Sub Form_Open(Cancel As Integer)
' Minimize the database window and initialize the form.

' Move to the switchboard page that is marked as the default.
Me.Filter = "[ItemNumber] = 0 AND [Argument] = 'Default' "
Me.FilterOn = True

End Sub

Private Sub Form_Current()
' Update the caption and fill in the list of options.

Me.Caption = Nz(Me![ItemText], "")
FillOptions

End Sub

Private Sub FillOptions()
' Fill in the options for this switchboard page.

' The number of buttons on the form.
Const conNumButtons = 8

Dim con As Object
Dim rs As Object
Dim strSQL As String
Dim intOption As Integer

' Set the focus to the first button on the form,
' and then hide all of the buttons on the form
' but the first. You can't hide the field with the focus.
Me![Option1].SetFocus
For intOption = 2 To conNumButtons
Me("Option" & intOption).Visible = False
Me("OptionLabel" & intOption).Visible = False
Next intOption

' Open the table of Switchboard Items, and find
' the first item for this Switchboard Page.
Set con = Application.CurrentProject.Connection
strSQL = "SELECT * FROM [Switchboard Items]"
strSQL = strSQL & " WHERE [ItemNumber] > 0 AND [SwitchboardID]=' " & Me![SwitchboardID]
strSQL = strSQL & " ORDER BY [ItemNumber];"
Set rs = CreateObject("ADODB.Recordset")
rs.Open strSQL, con, 1 ' 1 = adOpenKeyset

' If there are no options for this Switchboard Page,
' display a message. Otherwise, fill the page with the items
```

Figure 5: Visual Basic for Applications Code

5.3 Complex SQL statements are utilized to dynamically query information

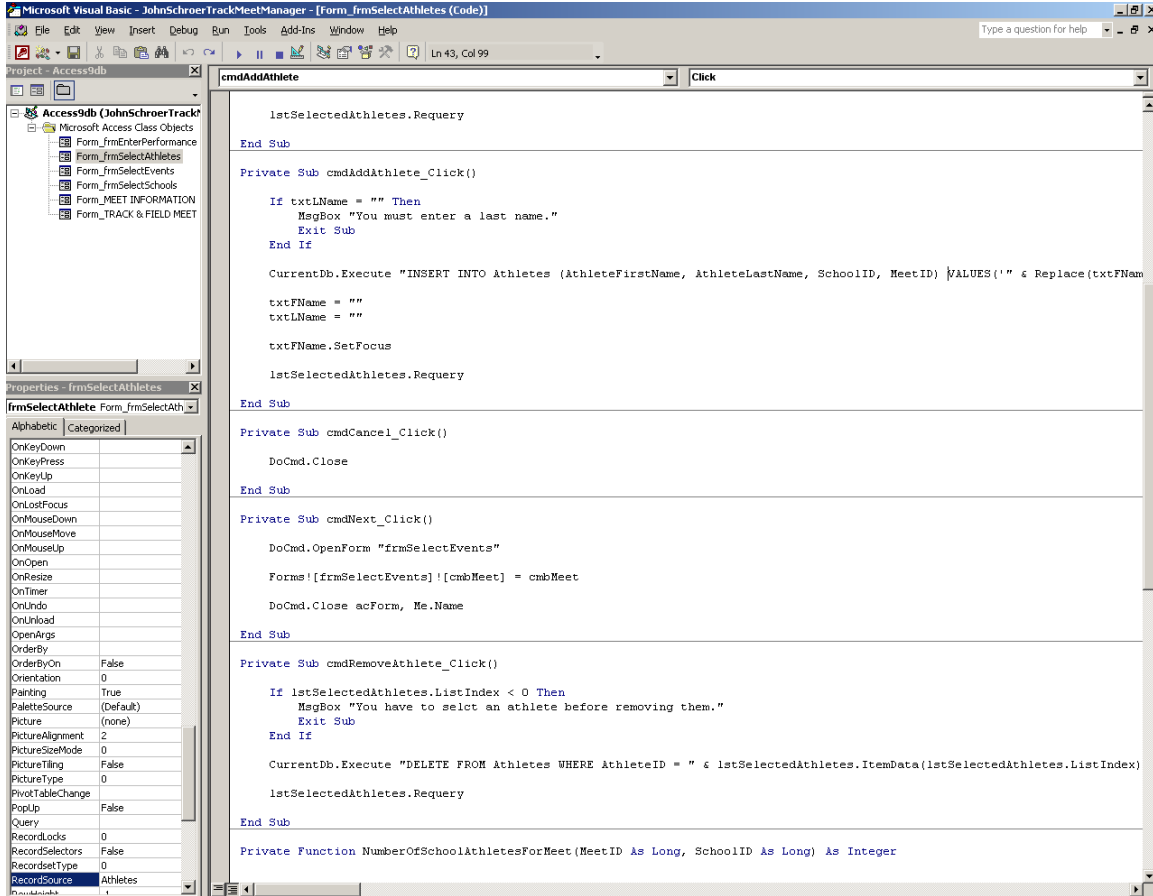


Figure 6: Complex SQL

5.4 Users of the Track and Field Meet Manager will have the following utilities at their disposal.

5.4.1 Create Team Lineup – Enter Athletes and Print

TRACK FIELD MEET MANAGER

ATHLETE EVENTS:

Meet: School Name: Event:

ATHLETES AVAILABLE:

- Buchanan, James
- Carter, Jimmy
- Clinton, Bill
- Eisenhower, Dwight
- Nixon, Richard
- Regan, Ronald
- Washington, George

ADD ATHLETE

REMOVE ATHLETE

ATHLETES SELECTED:

- Jefferson, Thomas
- Kennedy, John F.

Figure 7: Lineup Creation Interface

5.4.2 Create a Track and Field Meet

TRACK FIELD MEET MANAGER

MEET INFORMATION:

TITLE OF MEET:

DATE OF MEET:

LOCATION OF MEET:

Figure 8: Meet Creation Interface

5.4.3 Enter Team Performances

Meet Event

School Name	Athlete Name	Performance
LASALLE	Jefferson, Thomas	<input type="text"/>
LASALLE	Kennedy, John F.	<input type="text"/>

Figure 9: Team Performance Entry Interface

5.4.4 Print Team Lineup/Results

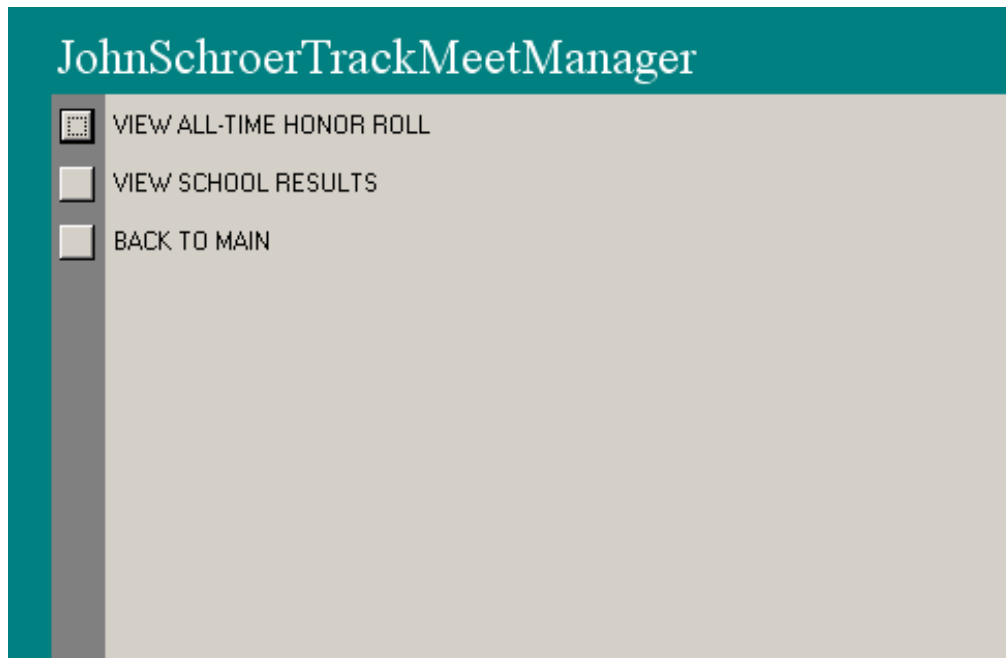


Figure 10: Print Results Interface

<i>MeetParticipants</i>	
<i>MeetDate:</i>	6/3/2004
<i>Rally's Invitational</i> Thursday, June 03, 2004	
Elder High School	
<u>DISCUS</u>	
Westendorf	
Bauer	
<u>HIGH JUMP</u>	
Smith	
Stautberg	
<u>LONG JUMP</u>	
Byrne	
Smith	
<u>POLE VAULT</u>	
Roa	
Kloepfer	
<u>SHOT PUT</u>	
Bauer	
Anevski	

Figure 11: Printed Lineup Sheet

6. Testing Procedures

Testing for this project consisted of each of the projected users setting up meets and performing the tedious task of entering results. In each of the scenarios the user was able to watch and enjoy the meet while they entered the results as they were sent to the press box for manual. No problems were encountered with any of the three users during any of the tasks involved.

I entered data during the first test and worked out bugs as they came along. By the end of the meet I had a working prototype of the project. Throughout this process I realized that to automate this process meant saving hours of time creating spreadsheets by hand. I was able to produce custom reports from this data for distribution to the athletes and coaches.

The process of entering results was not an issue for either the coaches or the volunteers. I was able to create reports from specific queries after all results were entered. All and all this was an easy application to use.

7. Conclusion & Recommendations

In conclusion, I was able to create an application that proved very useful to my fellow coaches. A process that was accomplished over a two week period while one of the coaches was sick can now be accomplished no more than an hour. There were many other features that may have been added, but considering the user it proved unnecessary. It is difficult to justify spending so much time on a project that will not ever be used. In this case, however, the application was used extensively during the second half of this past season.

When used for every meet throughout the season this application could have saved a large amount of time in statistical preparation. Packets were given to each individual with results from each meet. Those results could have been personalized if this application was used.

My recommendations for finishing this project include adding the scoring function and providing an interface from which to print. Altogether it was a successful project.

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