

# 09/12: Risks and Prototypes

## The Capstone Experience

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*From Students...  
...to Professionals*

# 09/12: Announcements

- Check Website Team Photo Names and Hometowns
- Using Google Calendar
  - Must Use MSU Email Address
  - Watch for Double Booking
- Apple Developer License
  - Request Invitation from Dr. D.
  - Team Members are Members
  - Spencer is Admin
- PowerPoint Slide Deck Submission Instructions
  - Read Carefully
  - File Name Conventions
    - All Lower Case
    - Replace Blanks with Dashes
    - Examples
      - ❖ “Quicken Loans” → “quicken-loans”
      - ❖ “team-company-name-status-report.pptx” → “team-quicken-loans-team-status-report.pptx”
- Does anyone need equipment?
- SharePoint experience? Interested in working in the AD’s office?
- Issues? Problems? Questions?



# Risks and Prototypes

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## ➤ Risks

- Prototypes

# Identifying Risks

- What You Don't
  - Know
  - Understand
  - Know How to Do
- Normally
  - Major Project Features
  - “Showstoppers”
- Varies From
  - Not Familiar With But (Probably) Can Learn to
  - Absolutely No Idea How to Do It

What are you worried about?

What should you be worried about?



# Example Risks

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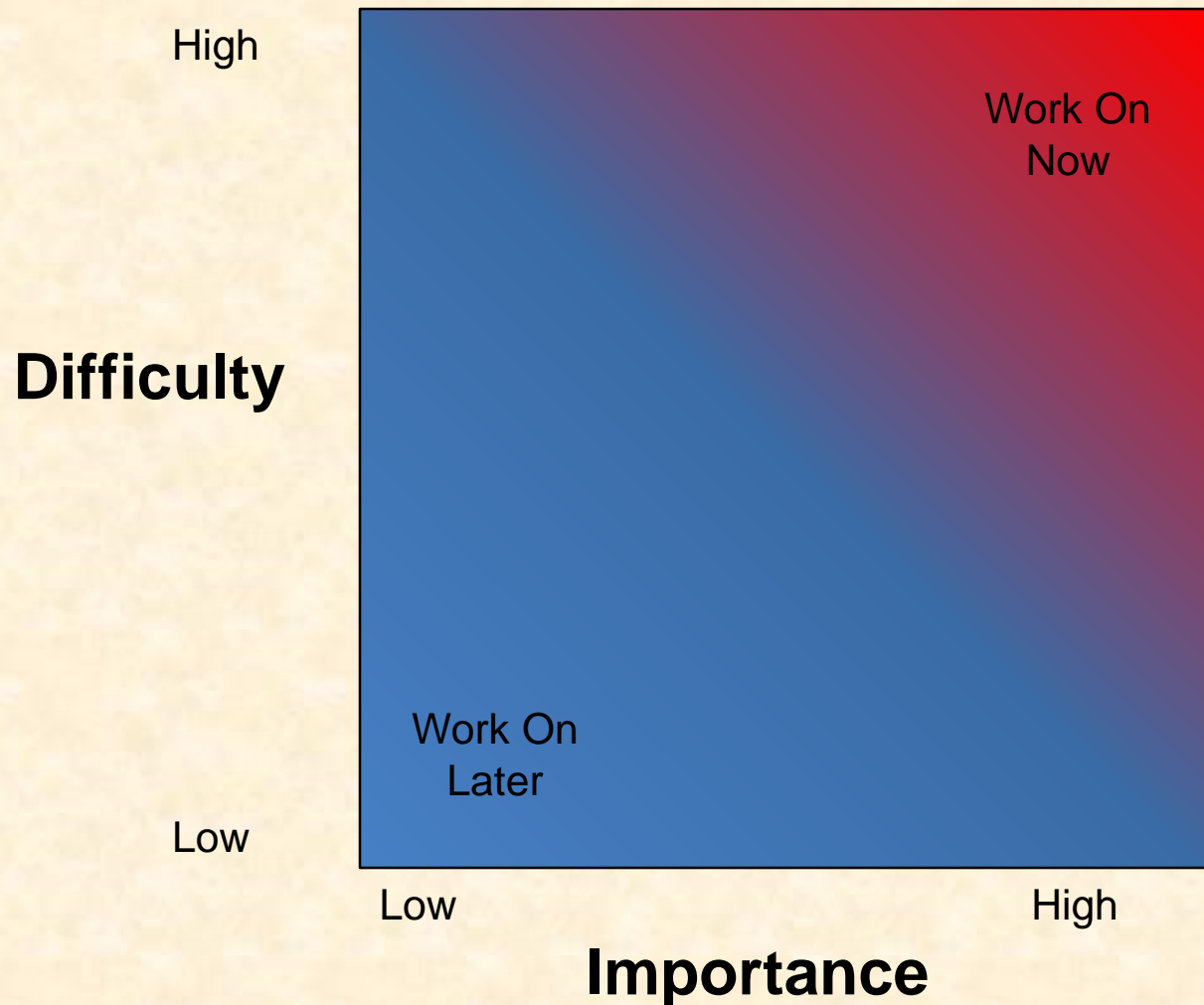
Including but not limited to...

- Key Application Features
- Hardware Systems
- Software Systems
- Development / Programming Environments
- Programming Languages
- Etc...

# Prioritizing Risks

- Classify Difficulty
  - High Very Hard, No Idea How to Do
  - Medium
  - Low Not Hard, Probably Doable
- Classify Importance
  - High Showstopper, Must Have
  - Medium
  - Low Not Vital, Nice to Have

# Prioritizing Risks



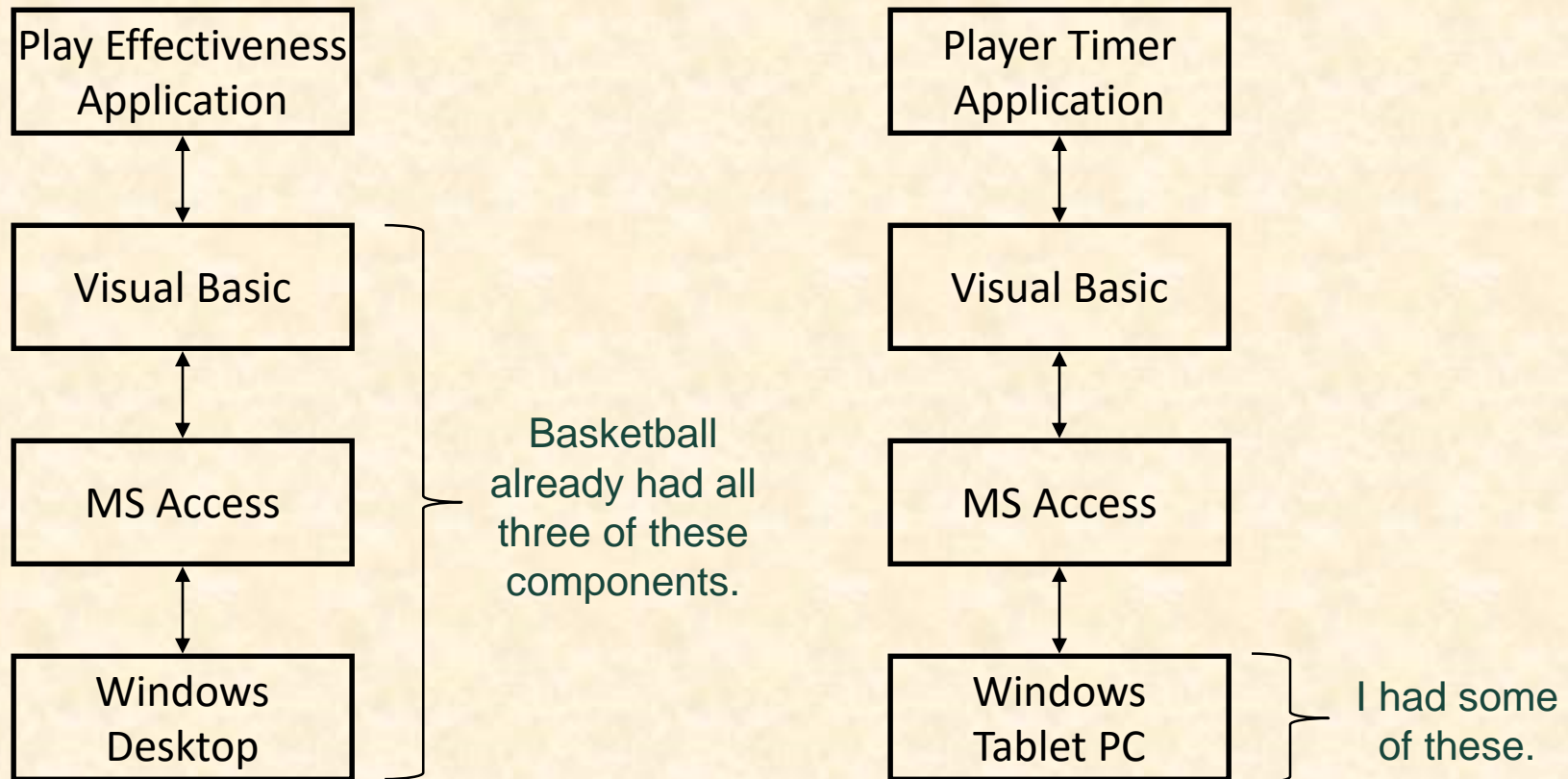
# Case Studies: Basketball Apps

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- Play Effectiveness
  - Determine Effectiveness of Plays
  - Record All Plays with Results
  - Produce Reports of Effectiveness
- Player Timer
  - Keep Track of Player Times
  - Record Minutes Played and Rested
  - Use On the Bench, During the Game



# Basketball Apps Architectures



# Basketball Apps Risks

- What SDK should I use?
- How do I program in Visual Basic?
- How do I make a GUI in VB?
- How do I interface VB with Access?
  - Create/Open/Save a Database?
  - Read/Write Records?
  - Traverse Records?
- How do I implement clocks in Windows?
  - Game Clock?
  - Wall Clock?
- How do I generate a report from Access?

# Mitigating Risks

- Use Existing Resources

- Including But Not Limited To

- Faculty
    - Other Students
    - Product Demos
    - Book Sample Code
    - Downloadable Examples
    - Wizards
    - Etc...

*Nota Bene:*

1. Check license if including in project.
2. Document.
3. Inform client.

- Test Drive

- Install
    - Compile
    - Extend
    - Etc...

- Build Prototypes

- Single Purpose
  - Quick-and-Dirty



# Basketball Apps Risk Mitigation

- Game Clock
  - Start /Stop
  - Counts Down
  - By Minutes:Seconds
- Handling Access Records
  - Write Number
  - Read Number
  - Add Up Numbers

Start	19:55
Stop	

Write	7
Read	14
Add Up	55



# Risks and Prototypes

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✓ Risks

➤ Prototypes

# Prototypes

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- Developed
  - Early
  - Rapidly
- Implement Subset of the Requirements
- Done for Variety of Reasons
- Are Not Finished Goods
- “Hacking” (Good Sense)

# Why? Answer Questions

## Help Determine...

- Specifications
  - Functional
  - Design
  - Technical
- Usability
- How Existing Code Works
- Programming Languages
- Development Environments
- Operating Environments
- Etc...



# Why? Determine Schedule

Determine how long it will take to...

- ...learn the new programming language.
- ...learn the development environment.
- ...learn the existing code.
- ...convert the existing code.
- ...convert the existing database.
- ...get libraries working.
- ...deploy the application onto an iOS device.
- ...Etc....





# Why? Identify Risks

- Operability
  - How do we make a game clock?
  - Where do we store the data?
- Interoperability
  - How does the game clock work with other tablets?
  - How do the tablets all write to the same database?
- Scalability
  - Will the game clock propagate in real time?
  - Will the database engine keep up?
- Reliability
  - What happens if the clock tablet dies?
  - What happens if the database tablet dies?
- Etc-Ability...



# Speed (to Write)

- Critical
- 2-3 Day Tasks
- Use Whatever Works
  - RAD Languages
  - SDK's
  - IDE's
  - Design Tools
  - Wizards
  - Sample Code
  - Etc...
- Stop When Questions Answered



# Tradeoffs: Speed (to Write) vs...

- Speed vs Best Practices
  - Testing
  - Documentation
  - Security
  - Software Engineering
  - Usability
  - Performance
  - Coding Standards
  - User Interface Standards
  - Using Real Data
  - Etc...
- Hence, May Not Be Appropriate in Final Deliverable

# Challenge/Danger

- “Hack” Solution

- It works.
- It’s **\*a\*** way to do something.

vs

- “Correct” Solution

- It works.
- It’s the **\*“right”\*** way to do something.  
(There may be more than one “right” way to do something.)

Often My Biggest  
Frustration



# Basketball Prototypes Case Studies

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- Play Effectiveness
- Player Timer
- Radio Stats
- Real Time Play Stats
- Plus/Minus



# Play Effectiveness App

- Functional Specifications
  - Determine Effectiveness of Plays
  - Record All Plays with Results
  - Produce Reports of Effectiveness
    - Each Play
    - # of Successes / # of Attempts
- Design Specifications?
- Technical Specifications?



# Initial Meeting with Video Coordinator

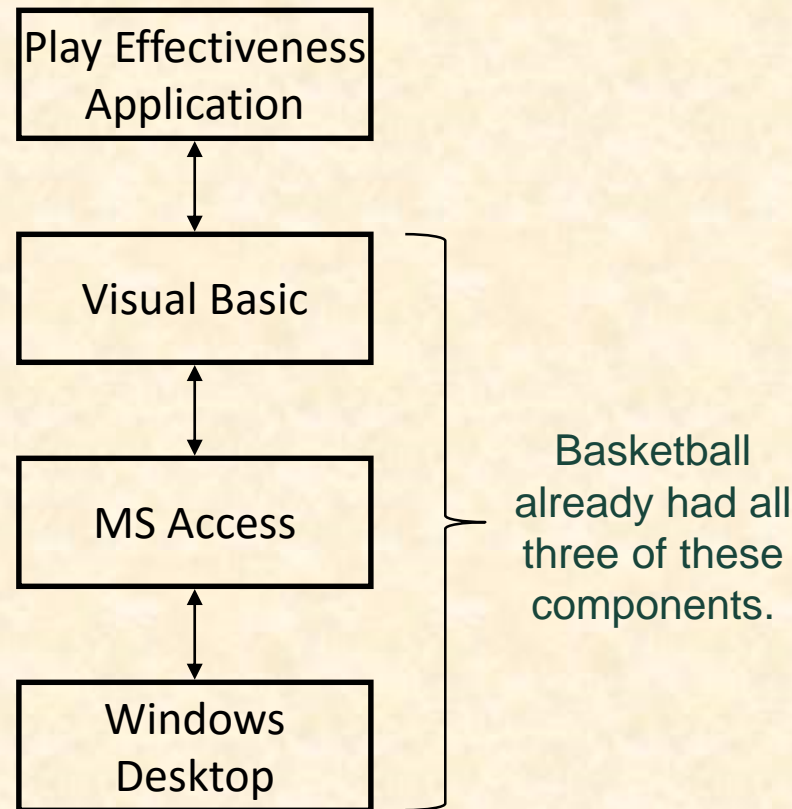
## I Learned...

- Done After Game
  - On Desktop Computer
  - From DVR-Like App
- Lots of Plays (~ 200) in Play Book
- ~20-40 Plays Run Per Game
- Plays Categorized
  - Early Offense 1,2 (i.e., Fast Breaks)
  - Offense 1,2 (i.e., Half Court Plays)
  - Special Situations 1,2 (i.e., Out of Bounds)
- Overwhelming ← Can you relate?

The  
Business  
Processes



# Play Effectiveness Architecture





# Risks

- Learning Basketball Business Processes
- Programming in Visual Basic
- Making a GUI in VB
- Interfacing VB with Access
  - Creating/Opening/Saving a Database
  - Reading/Writing Records
  - Traversing Records
- Generating Reports in Access
- Etc...



BB Stats Alpha V1

Detail

**Game**

<b>Opponent</b>	Harvard University	<b>Location</b>	Boston
<b>Date</b>	July 4, 1776	<b>Number</b>	1776070401

**Play**

<b>P#</b>	48
<b>T</b>	12:34
<b>C#</b>	426
<b>EO1</b>	Run
<b>EO2</b>	Gun
<b>01</b>	1-4 Screen
<b>02</b>	Low Post
<b>SS1</b>	SLOB
<b>SS2</b>	Blah
<b>R</b>	Two Pointer
<b>Notes</b>	Feed to Adams. Washington always gets the rebound. Jefferson or Hamilton should take the shot.

**Roster**

<b>1</b>	00:00	00:00	Adams, John
<b>2</b>	00:00	00:00	Jefferson, Tom
<b>3</b>	00:00	00:00	Washington, George
<b>4</b>	00:00	00:00	Franklin, Ben
<b>5</b>	00:00	00:00	Hamilton, Alex

Next Play

## BB PE PV1

(Prototype Version 1)

### Fields

- P# Play Number
- T Time
- C# Clip Number
- EO Early Offense
- O Offense
- SS Special Situations
- R Result

### Nota Bene

- Just Screen Layout
- No Code (Underneath)
- Never Have All Entries Filled at Once



# What I Learned From PV1

[1 of 2]

- Wanted to Identify Plays Within a Possession
- Plays Categorized Series / Set
  - Set is Variation on Series (“Parameterized Plays”)
  - E.g.
    - Series: Thumbs
    - Sets: Up, Down, Circle
    - Plays: Thumbs Up, Thumbs Down, Thumbs Circle
  - 1, 2 Notation
    - EO1 = Early Offense Series
    - EO2 = Early Offense Set
  - ST (Special Teams) Missing

Huge  
Impact On  
Design



# What I Learned From PV1

[2 of 2]

- Results Coded
  - *XN* Missed *N* Pointer (X1, X2, X3)
  - *ON* Made *N* Pointer (O1, O2, O3)
  - *FF* Foul on the Floor
  - *TO* Time Out
  - Etc...
- Wanted to Record Notes on Defense
- Didn't Care About
  - Player Times
  - Video Clip Number (C#)



BB Stats Alpha V1

Detail

**Game**

<b>Opponent</b>	Harvard University	<b>Location</b>	Boston
<b>Date</b>	July 4, 1776	<b>Number</b>	1776070401

**Play**

<b>P#</b>	48
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<b>Notes</b>	Feed to Adams. Washington always gets the rebound. Jefferson or Hamilton should take the shot.

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<b>3</b>	00:00	00:00	Washington, George
<b>4</b>	00:00	00:00	Franklin, Ben
<b>5</b>	00:00	00:00	Hamilton, Alex

Next Play

**So, from this to...**

## BB PE PV1

### Fields

- P# Play Number
- T Time
- C# Clip Number
- EO Early Offense
- O Offense
- SS Special Situations
- R Result

### *Nota Bene*

- Just Screen Layout
- No Code (Underneath)
- Never Have All Entries Filled at Once



BB Stats Alpha V2

Detail

**Play**

T 12:34 PO# 12 PL# 17

	Series	Set
EO	Early Offense	Corner (Rescreen-Post)
OF	Zone Offense	Jersey - Side Ball Screen
ST	BLOB	Quick Post for Perimeter
SS	2 For 1	Blah Blah
R	O2	
DF	Man-to-Man	
Notes	Feed to Adams. Washington always gets the rebound. Jefferson or Hamilton should take the shot.	

**Roster**

1	Adams, John
2	Jefferson, Tom
3	Washington, George
4	Franklin, Ben
5	Hamilton, Alex

**Commands**

Insert Play Insert Possession

Clear Play

Save Play

Delete Play

**Game**

Opponent	Harvard University	Location	Boston
Date	July 4, 1776	Number	1776070401

## BB PE PV2

### Fields

- PO#  
Possession Number
- PL#  
Play Number
- SS  
Special Situations
- DF  
Defense

### *Nota Bene*

- Just Screen Layout
- No Code (Underneath)
- Would **NOT** Have Entries in All Fields





# What I Learned From PV2

---

- Wanted to Grade Effectiveness of Plays
- Wanted to Record Player Steals and Assists (Remember this...)
- Needed to Navigate Plays and Possessions
- Wanted to See Running Score

BB Stats Alpha V2

Detail

**Play**

T 12:34 PO# 12 PL# 17

	Series	Set
EO	Early Offense	Corner (Rescreen-Post)
OF	Zone Offense	Jersey - Side Ball Screen
ST	BLOB	Quick Post for Perimeter
SS	2 For 1	Blah Blah
R	O2	
DF	Man-to-Man	
Notes	Feed to Adams. Washington always gets the rebound. Jefferson or Hamilton should take the shot.	

**Roster**

1	Adams, John
2	Jefferson, Tom
3	Washington, George
4	Franklin, Ben
5	Hamilton, Alex

**Commands**

Insert Play Insert Possession

Clear Play

Save Play

Delete Play

**Game**

Opponent	Harvard University	Location	Boston
Date	July 4, 1776	Number	1776070401

## BB PE PV2

### Fields

- PO#  
Possession Number
- PL#  
Play Number
- SS  
Special Situations
- DF  
Defense

### *Nota Bene*

- Just Screen Layout
- No Code (Underneath)
- Would **NOT** Have Entries in All Fields

So, from  
this to...





## Detail

## Play

PE#	2	Time	12:34	PL#	17	MSU	37	Op	23
	Series			Set			Effectiveness		
EO	Early Offense			Corner (Rescreen-Post)			Great		
ST	BLOB			Quick Post for Perimeter			Poor		
OF	Zone Offense			Jersey - Side Ball Screen			So-So		
R	X			O			Outstanding		
DF	Man-to-Man			Something Else			Good		
SS	2 For 1			Blah Blah			Unreal		

## Notes

Feed to Adams. Washington always gets the rebound. Jefferson or Hamilton should take the shot.

## Game

Opponent	Harvard University	Location	Boston
Date	11/17/2003	Number	1776070401

## Roster

P	Player	S	A
1	Unbound	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Jefferson, Tom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Washington, George	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Franklin, Ben	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hamilton, Alex	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## Commands

Next Play	Next Possession
Previous Play	Previous Possession
Delete Play	Delete Possion
Exit	



# What I Learned From PV3

- Wanted...
  - Grades to Be A, B, C, D, F
  - Results Associated With Players
  - Series/Set Combined  
("Thumbs Up" Rather Than "Thumbs", "Up")
  - To Record Player Rebound
- Will be used by...
  - Video Coordinator, GAs, and Managers
  - Very Familiar with DVR Controls
- Did NOT Want to Record Player Steals or Assists



## Detail

## Play

PE#	2	Time	12:34	PL#	17	MSU	37	Op	23
	Series			Set			Effectiveness		
EO	Early Offense			Corner (Rescreen-Post)			Great		
ST	BLOB			Quick Post for Perimeter			Poor		
OF	Zone Offense			Jersey - Side Ball Screen			So-So		
R	X			O			Outstanding		
DF	Man-to-Man			Something Else			Good		
SS	2 For 1			Blah Blah			Unreal		

## Notes

Feed to Adams. Washington always gets the rebound. Jefferson or Hamilton should take the shot.

So, from  
this to...

## Game

Opponent	Harvard University	Location	Boston
Date	11/17/2003	Number	1776070401

## Roster

P	Player	S	A
1	Unbound	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Jefferson, Tom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Washington, George	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Franklin, Ben	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hamilton, Alex	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## Commands

Next Play	Next Possession
Previous Play	Previous Possession
Delete Play	Delete Possion
Exit	



Season

Game

OpponentHarvardDateThursday, July 04, 1776

LocationBoston, MATime7:00 PM

VenueIvy League ChallengeTVNot Yet

⏮ ⏪ ⏩ ⏭ ⏮ ⏭

Game ID17760704

Possessions

Clock

Period1Possession0MSU0

Time20:00Play0Opponent0

Game ID17760704

Series / Set

Early Offense

Offense

Special TeamsBLOB, 3 Across

Special Situations

Offense ResultX3Offense GradeB

Defense

Defense ResultDefense Grade

Roster

ResultRebnd#Player

1Adams, John

2Jefferson, Tom

X33Washington, George

4Franklin, Ben

5Hamilton, Alex

ResultRebnd#Player

Notes

Possession Buttons

⏮ ⏪ ⏩ ⏭ ⏮ ⏭

Miscellaneous Buttons

⏮ ⏪ ⏩ ⏭ ⏮ ⏭

Play Buttons

⏮ ⏪ ⏩ ⏭ ⏮ ⏭

Record: 1 of 6 No Filter Search

BB PE AV1

(Alpha Version 1)

First Version  
With Code

Not Much  
Implemented



# What I Learned From Alpha 1

- Entering a Play
  - Some Things Calculated Automatically
    - Play/Possession Number
    - Score
  - Most Things Entered With Mouse Via Pull-Down Menus
    - Series / Set
    - Result
  - But Time Entered With Keyboard Via Typing Numbers
- Need
  - Mouse-Only Input
  - Easy Way to Adjust Clock



Season

**Game**

Opponent: Harvard Date: Thursday, July 04, 1776

Location: Boston, MA Time: 7:00 PM

Venue: Ivy League Challenge TV: Not Yet

Game ID: 17760704

**Possessions**

**Clock**

Period: 1 Possession: 0 MSU: 0

Time: 20:00 Play: 0 Opponent: 0

**Game ID** 17760704

**Series / Set**

Early Offense: [Dropdown]

Offense: [Dropdown]

Special Teams: BLOB, 3 Across [Dropdown]

Special Situations: [Dropdown]

Offense Result: X3 [Dropdown] Offense Grade: B [Dropdown]

Defense: [Dropdown]

Defense Result: [Dropdown] Defense Grade: [Dropdown]

**Roster**

Result	Rebnd	#	Player
[Dropdown]	<input type="checkbox"/>	1	Adams, John [Dropdown]
[Dropdown]	<input type="checkbox"/>	2	Jefferson, Tom [Dropdown]
X3 [Dropdown]	<input type="checkbox"/>	3	Washington, George [Dropdown]
[Dropdown]	<input type="checkbox"/>	4	Franklin, Ben [Dropdown]
[Dropdown]	<input type="checkbox"/>	5	Hamilton, Alex [Dropdown]

**Notes**

**Possession Buttons**

[Previous] [Back] [Next] [Next+1] [Next+2] [Next+3]

**Play Buttons**

[Previous] [Back] [Next] [Next+1] [Next+2] [Next+3]

**Miscellaneous Buttons**

[Undo] [Eraser] [Sum] [Home] [End] [Refresh]

[Warning] [List] [Link] [Stop]

Record: 1 of 6 No Filter Search

BB PE AV1

(Alpha Version 1)

First Version  
With Code

Not Much  
Implemented

So, from  
this to...



Season

Game

OpponentHarvardDateThursday, July 04, 1776

LocationBoston, MATime7:00 PM

VenueIvy League ChallengeTVNot Yet

Game ID17760704

Possessions

Clock

Period1Possession1MSU0Time18:07

Play1Opponent0

Series / Set

Early Offense

Offense1-4 Series, 1-4 Go

Special Teams

Special Situations

Offense ResultO2Offense Grade

Defense

Defense Result

Defense Grade

Roster

ResultRebnd#Player

1Adams, John

2Jefferson, Tom

O23Washington, George

4Franklin, Ben

5Hamilton, Alex

ResultRebnd#Player

Notes

Possession Buttons

Miscellaneous Buttons

Play Buttons

Game ID17760704

Record: 1 of 1

BB PE AV2

Still Not Much  
Implemented



Season

Game

OpponentHarvardDateThursday, July 04, 1776

LocationBoston, MATime7:00 PM

VenueIvy League ChallengeTVNot Yet

Game ID17760704

Possessions

Clock

Period1Possession1MSU0Time18:07

Play1Opponent0

Series / Set

Early Offense

Offense1-4 Series, 1-4 Go

Special Teams

Special Situations

Offense ResultO2Offense Grade

Defense

Defense Result

Defense Grade

Roster

ResultRebnd#Player

1Adams, John

2Jefferson, Tom

O23Washington, George

4Franklin, Ben

5Hamilton, Alex

ResultRebnd#Player

Notes

Possession Buttons

Miscellaneous Buttons

Play Buttons

Game ID17760704

Record: 1 of 1

# BB PE BV1

(Beta Version 1)





# Basketball Prototypes Case Studies

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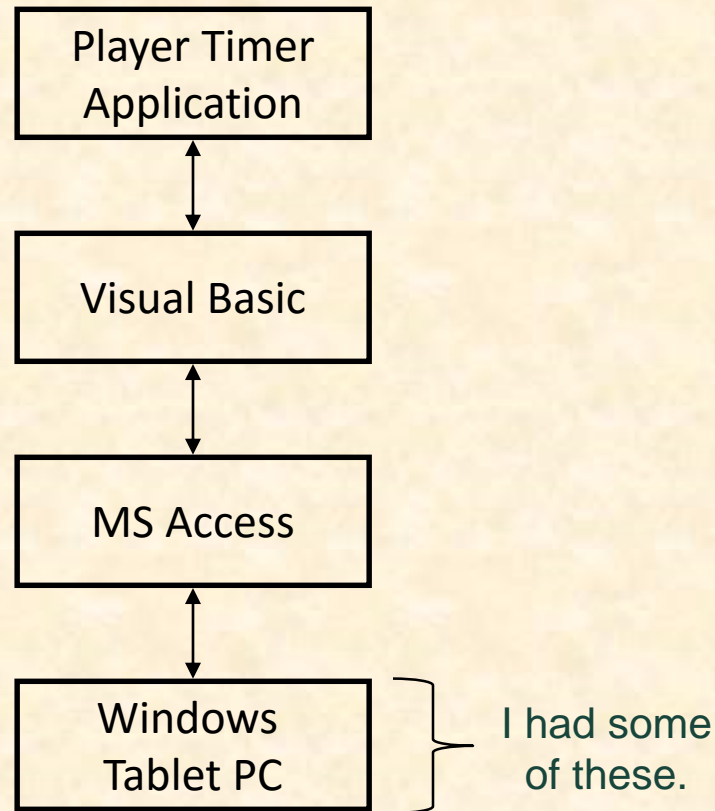
- ✓ Play Effectiveness
  - Player Timer
  - Radio Stats
  - Real Time Play Stats
  - Plus/Minus

# Player Timer App

- Keep Track of Player Times
- For Each Player Record
  - Minutes Played
    - Game Clock Time
    - Consecutive & Total
  - Minutes Rested
    - Wall Clock Time
    - Consecutive
- Must
  - Be Usable on the Bench, During the Game
  - Be Portable and Not Require Electrical Outlet
  - Feel Like a Pen and a Clipboard



# Player Timer App



# Risks

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- Learning Basketball Processes
- Implementing Clocks in Windows?
  - Game Clock
  - Wall Clock
- Very Limited Screen Real Estate  
(Different Problem Than Mobile App)
- Computing and Displaying Cumulative Times
- Hidden Risk (“Danger Will Robinson!”)



# Player Timer Development

- Knew Exactly What They Wanted, So...
- Designed “Final” Version
  - User Interface
  - Data Base Schema
  - Etc...
- Coded “Final” Version
- Bench Tested “Final” Version
- Field Tested “Final” Version
  - In Practice Scrimmage
  - Totally and Completely Unusable
- Scrapped “Final” Version UI and Started Over

Huge  
Mistake!



Player Timer - Spartan Basketball Stats

Home

Period: 1 Time: 16:19

Michigan State Spartans Men's Basketball

Start the Clock

	Select Player	Checked Out				Check Player In / Out	Checked In			
		Time		#	Player		#	Player	Time	
		Current	Remaining						Current	Remaining
<input checked="" type="checkbox"/>	1	1:12	1:48		←	3	Allen	0:04	3:56	
<input checked="" type="checkbox"/>	2	1:52	1:08	41	→			0:33	3:27	
<input checked="" type="checkbox"/>	3	0:00	3:00	23	→			0:00	4:00	
<input checked="" type="checkbox"/>	4	0:00	3:00		←	40	Herzog	3:07	0:53	
<input checked="" type="checkbox"/>	5	0:00	3:00	0	→			0:00	4:00	
<input checked="" type="checkbox"/>	6	0:27	2:33	1	→			3:37	0:24	
<input checked="" type="checkbox"/>	7	0:00	3:00	34	→			0:00	4:00	
<input checked="" type="checkbox"/>	8	0:00	3:00		←	2	Morgan	3:41	0:20	
<input checked="" type="checkbox"/>	9	0:00	3:00	10	→			0:00	4:00	
<input checked="" type="checkbox"/>	10	0:00	3:00		←	15	Summers	2:58	1:02	
<input checked="" type="checkbox"/>	11	0:00	3:00		←	14	Suton	3:41	0:20	
<input checked="" type="checkbox"/>	12	0:00	3:00	5	→			0:00	4:00	

Start the Clock

View Game Stats    Check Out All    Begin the Period    End the Period

Load Roster    Open    Exit

Form View

# Software Updates

- Enable Clock Adjustments (While Clock Stopped)
- Enable Check In/Out By Touching
  - Check In/Out Button
  - Player Name
  - Player Slot
- Allow > 5 Players Checked In (While Clock Stopped)
- Enable Pending Check In (While Clock Running)
- Eliminate All Modal Dialog Boxes

# Basketball Prototypes Case Studies

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- ✓ Play Effectiveness
- ✓ Player Timer
  - Radio Stats
  - Real Time Play Stats
  - Plus/Minus



Microsoft Access - [Bader's Radio Statistics]

File Edit View Insert Format Records Tools Window Help Type a question for help

Michigan State University								13	19 / 23	83%	22	5	78	
LR	SR	R	"-"	PF	O1	X1	%O1	O2	O3	Total				
Brown, Shannon								3	0	4 / 4	100%	2	1	11
<input checked="" type="checkbox"/>	1	R		PF	O1	X1	%O1	O2	O3	Total				
Hill, Chris								5	2	2 / 2	100%	0	0	2
<input checked="" type="checkbox"/>	2	R		PF	O1	X1	%O1	O2	O3	Total				
Neitzel, Drew								12	2	1 / 2	50%	2	0	5
<input checked="" type="checkbox"/>	3	R		PF	O1	X1	%O1	O2	O3	Total				
Ager, Maurice								13	3	2 / 3	67%	6	0	14
<input checked="" type="checkbox"/>	4	R		PF	O1	X1	%O1	O2	O3	Total				
Anderson, Alan								15	4	2 / 2	100%	3	3	17
<input checked="" type="checkbox"/>	5	R		PF	O1	X1	%O1	O2	O3	Total				
Torbert, Kelvin								23	5	0 / 0	-	2	1	7
<input checked="" type="checkbox"/>	6	R		PF	O1	X1	%O1	O2	O3	Total				
Bograkos, Tim								30	0	0 / 0	-	0	0	0
<input checked="" type="checkbox"/>	7	R		PF	O1	X1	%O1	O2	O3	Total				
Naymick, Drew								34	1	0 / 0	-	0	0	0
<input checked="" type="checkbox"/>	8	R		PF	O1	X1	%O1	O2	O3	Total				
Davis, Paul								40	3	8 / 10	80%	6	0	20
<input checked="" type="checkbox"/>	9	R		PF	O1	X1	%O1	O2	O3	Total				
Rowley, Delco								50	0	0 / 0	-	0	0	0
<input checked="" type="checkbox"/>	10	R		PF	O1	X1	%O1	O2	O3	Total				
Ibok, Idong								0	0	0 / 0	-	0	0	0
<input checked="" type="checkbox"/>	11	R		PF	O1	X1	%O1	O2	O3	Total				
Gray, Marquise								42	0	0 / 0	-	0	0	0
<input checked="" type="checkbox"/>	12	R		PF	O1	X1	%O1	O2	O3	Total				

Duke								12	17 / 24	71%	15	7	68	
LR	SR	R	"-"	PF	O1	X1	%O1	O2	O3	Total				
Redick, J.J.								4	0	2 / 2	100%	1	3	13
<input checked="" type="checkbox"/>	1	R		PF	O1	X1	%O1	O2	O3	Total				
Ewing, Daniel								5	3	2 / 4	50%	5	2	18
<input checked="" type="checkbox"/>	2	R		PF	O1	X1	%O1	O2	O3	Total				
Melchionni, Lee								13	1	2 / 2	100%	1	2	10
<input checked="" type="checkbox"/>	3	R		PF	O1	X1	%O1	O2	O3	Total				
McClure, David								14	0	0 / 0	-	0	0	0
<input checked="" type="checkbox"/>	4	R		PF	O1	X1	%O1	O2	O3	Total				
Dockery, Sean								15	3	0 / 0	-	0	0	0
<input checked="" type="checkbox"/>	5	R		PF	O1	X1	%O1	O2	O3	Total				
Nelson, DeMarcus								21	2	2 / 4	50%	3	0	8
<input checked="" type="checkbox"/>	6	R		PF	O1	X1	%O1	O2	O3	Total				
Williams, Shelden								23	5	9 / 10	90%	5	0	19
<input checked="" type="checkbox"/>	7	R		PF	O1	X1	%O1	O2	O3	Total				
Love, Reggie								30	4	0 / 0	-	0	0	0
<input checked="" type="checkbox"/>	8	R		PF	O1	X1	%O1	O2	O3	Total				
Perkins, Ross								40	0	0 / 0	-	0	0	0
<input checked="" type="checkbox"/>	9	R		PF	O1	X1	%O1	O2	O3	Total				
Davidson, Patrick								41	0	0 / 0	-	0	0	0
<input checked="" type="checkbox"/>	10	R		PF	O1	X1	%O1	O2	O3	Total				
Randolph, Shavlik								42	3	0 / 2	0%	0	0	0
<input checked="" type="checkbox"/>	11	R		PF	O1	X1	%O1	O2	O3	Total				
Pagliuca, Joe								45	0	0 / 0	-	0	0	0
<input checked="" type="checkbox"/>	12	R		PF	O1	X1	%O1	O2	O3	Total				

2  
Period

78  
MSU

68  
Duke

19 / 23  
83%

17 / 24  
71%

13 PF  
MSU

12 PF  
Duke

Scoring Runs

Open  
Exit

Form View

NUM



## Real Time Play Stats

Spartan Basketball Plus/Minus - Spartan Basketball Plus/Minus
Home

Period
Michigan State Spartans Men's Basketball
Time

2
Illinois
0:00

Start the Clock

Player Roster
Assign Player to Position

1	1	Lucas	1	2	3	4	5
2	34	Lucious	1	2	3	4	5
3			1	2	3	4	5
4	2	Morgan	1	2	3	4	5
5	3	Allen	1	2	3	4	5
6	13	Thornton	1	2	3	4	5
7	15	Summers	1	2	3	4	5
8	22	Dahlman	1	2	3	4	5
9			1	2	3	4	5
10	10	Roe	1	2	3	4	5
11	23	Green	1	2	3	4	5
12	40	Herzog	1	2	3	4	5
13	41	Sherman	1	2	3	4	5
14	50	Nix	1	2	3	4	5
15			1	2	3	4	5
16			1	2	3	4	5
17	20	Kebler	1	2	3	4	5
18	25	Crandell	1	2	3	4	5

Players in Positions

1	20	Kebler
2	13	Thornton
3	22	Dahlman
4	25	Crandell
5	40	Herzog

Scoring

Michigan State

73

01 02 03 ↶

Start the Clock

Illinois

63

01 02 03 ↶

Start the Clock

Exit
Open Game
View Report
Reset Positions
Begin the Period
Load Roster

Form View

Plus/Minus



# Risks and Prototypes

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✓ Risk

✓ Prototypes

# What's ahead?

[1 of 3]

- All-Hands Meetings
  - ~~08/31: Capstone Overview~~
  - ~~09/05: (Labor Day, No Meeting)~~
  - ~~09/07: Project Plan~~
  - ~~09/12: Risks and Prototypes~~
  - 09/14: Status Report Presentations
  - 09/19: Team Project Plan Presentations
  - 09/21: Team Project Plan Presentations
  - 09/26: Resume Writing and Interviewing
  - 09/28: Career Gallery
  - 10/03: Team Project Plan Presentations
  - 10/05: Team Project Plan Presentations



# What's ahead?

[2 of 3]

- Team Status Report Presentations
  - [PowerPoint Template](#)
  - Due 4:00 a.m., Wednesday, September 14
  - 2 Days  Get on it now!
  - Email to Dr. D.
    - Subject: Team <Company Name>: Status Report  
Subject: Team Auto-Owners: Status Report
    - Attachment: team-<company-name>-status-report-presentation.ppt  
Attachment: team-urban-science-status-report-presentation.ppt
    - Body: Include Body to Avoid Spam Folder
- Dr. D. Will Combine Into Single PowerPoint
  - To Speed Things Up During Meeting
  - Do NOT Modify Master Slide
  - Must Use Windows Version of Microsoft Office
- Each Team Presents
  - Using Dr. D.'s Laptop
  - At Most 5 Minutes (Rehearse Timing)
  - Single or Multiple Presenters (Your Choice)





# What's ahead?

[3 of 3]

- Project Plan Presentations

- PowerPoint Template

- Download Now
    - Read the Read Me Slide (Over and Over and Over...)

- Submission

- Both Project Plan Document and PowerPoint Slide Deck
    - Due 4:00 a.m., Monday, September 19
    - See Submission Instructions in Template



Get on it now!

- Presenting

- 4 Teams Per Meeting Over 4 Meetings
    - Schedule Posted Sunday Evening
    - Strict 15 Minute Time Limit
    - Use Team Member Laptop
      - ❖ Bring Power Cord
      - ❖ Test In Meeting Room (in Advance)
    - Rehearse
    - 5% of Final Grade
    - Business Casual Dress

- Formal Team Photos

- Immediately Following Meeting
    - In Capstone Lab

- Schedule Conflicts

- Only for Interview Trips
    - Notify Dr. D. Well In Advance

