

Create

by

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4/20/2017

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4/20/2017

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ABSTRACT

Putting together an information system from one department to another can often be a huge burden on an IS department. We created Create so if anyone in any department familiar with Google apps could imagine a better system, they could also create it for free. For small companies this could be used for internal systems and for larger corporations this could be used as a great prototyping tool. Half the time building a report is deciding on field definitions and calculations. If the end-user was actually able to query the exact fields they were referring to themselves before it was brought to you all that time would be saved. This also helps the end user discover what they really want before asking for the wrong thing. Create will be a popular tool for years to come and an essential tool for any growing business. Saving time and money for everyone.

1. PROBLEM STATEMENT

1.1 INTRODUCTION

Many schools and small companies have multiple spreadsheets filled with information that they know how they want to see but aren't quite sure how to connect it. Some companies have been considering moving to Google Enterprise and some schools have been also considering Google Education. However, there is a large dilemma holding them back; the ability to create quick prototypes using Microsoft Access which is not compatible on the Chrome OS.

1.2 PROJECT DESCRIPTION

1.2.1 PROJECT DESCRIPTION

The project is to design a web app or something similar capable of running on the Google Chrome OS for the company to take large sets of data and create their own prototypes. It must be user friendly in order for employees with minimal technology backgrounds to pick up generally quickly. It must also integrate well with the Google drive file system for storage.

1.2.2 PROJECT REQUIREMENTS

- The project must be completed by May of 2017
- Must run on the Chrome OS
- Capable of simultaneous collaboration
- Secure and backed by a trusted relational database

1.3 PROBLEM

Companies and schools moving to Google Enterprise or Google Education from the Microsoft suite have a large dilemma holding them back. It is the ability to quickly create functioning prototypes and meniscal enterprise resource planning systems using Microsoft Access or similar tools that are not compatible on the Chrome OS.

1.4 USER PROFILE

1.4.1 APPLICATION

Tools used to Create simple information systems on the fly.

1.4.2 POTENTIAL USERS

- Non- IS department employees trying to create a report
- Teachers/Students
- Small Business Owners

1.4.3 SOFTWARE AND INTERFACE EXPERIENCE

- Familiar with how to use a Chrome browser beginner to moderate level
- Familiar with how to use Google Drive beginner to moderate skill level

1.4.4 EXPERIENCE WITH SIMILAR APPLICATIONS

- Moderate to advanced knowledge of common Google Apps

- The IS department preferably advanced knowledge of common information systems such as SSMS and SSRS.

1.4.5 TASK EXPERIENCE

- The end-user will need to be able to relate fields using a GUI tool.
- Must have a thorough understanding of the data they want to use, and an idea of the information they want to create.
- An ability to create a table in Excel and click through a GUI in google forms
- An ability to copy and paste into Google sites
- An ability to understand GUI for creating reports

1.4.6 FREQUENCY OF USE

Depending on user and reasoning anywhere from every day to every time a new application or report is needed.

1.4.7 KEY INTERFACE DESIGN REQUIREMENTS THAT THE PROFILE SUGGESTS

Easy, intuitive, similar to Google apps for ease of use.

1.4.8 THREE EXAMPLE USE CASES

The following table breaks down the typical user profile and the breakdown of the target market use of the tool.

Table 1 User Profile Form

User Profile Form
Application: Tool used to Create simple information systems on the fly.
Potential Users <ul style="list-style-type: none">• Non- IS department employees trying to create a report• Teachers/Students• Small Business Owners
Software and Interface Experience: <ul style="list-style-type: none">• Familiar with how to use a Chrome browser beginner to moderate level• Familiar with how to use Google Drive beginner to moderate skill level
Experience with Similar Applications: <ul style="list-style-type: none">• Moderate to advanced knowledge of common Google Apps• The IS department preferably advanced knowledge of common information systems such as SSMS and SSRS.
Task Experience: <ul style="list-style-type: none">• The end-user will need to be able to relate fields using a gui tool.• Must have a thorough understanding of the data in use and the information that they want to create.• An ability to create a table in Excel and click through a gui in google forms• An ability to copy and paste into Google sites• An ability to understand gui for creating reports
Frequency of Use: Depending on user and reasoning anywhere from every day to every time a new application or report is needed.
Key Interface Design Requirements that the Profile Suggests: Easy, intuitive, similar to Google apps for ease of use.

Non-IS Departments

Accountants or Sales teams often are begging for new reports from their IS departments left and right. Create allows these accountants and sales team members to be able to take the flat data they have access to and manipulate it how they want by relating it in our GUI tool and writing their own calculations that they sometimes have a better understanding for themselves in Google Sheets. This can be used as an actual system or just as an awesome high fidelity prototype for the IS department when writing the custom application.

Teachers/ Students

I wanted to list this potential user because these users may have a lesser understanding of how to use tools such as Google Sheets or Forms, however they can create much larger scale surveys or tests and not worry about their data being backed up or anything like that. For example, I was asked once to create a system for students scanning in and out for the restroom with a QR code. I imagine after a few years or maybe even after one year if the whole school is using this that the Google Sheet would have thousands and thousands of rows. This would normally be problematic but not with Create, the processing power of Google Sheets becomes almost limitless.

Small Business Owners

I've seen a ton of small business owners who are convinced there is no better solution than to spend thousands and thousands on a custom application. That seems to be the era we live in

currently, if you're not a developer as a small business your options are limited to figuring out a confusing prebuilt cheap CRM system or ERP system or switch to a completely custom built application. It's not necessary for a company to switch to a completely custom application when something as simple as Google Sheets could handle it if it just had a few more tools or features. And That's where Create comes in.

1.5 TECHNICAL ELEMENTS

1.5.1 THE SERVER

'Create' is set up on two separate servers. Both of which are on Amazon, the first is the database server and that is hosted by Amazon on their Relational Database Service tool. The second is also on Amazon however it is not an RDS.

1.5.2 SOFTWARE

We developed Create using Microsoft Visual Studio and have the back end developed using Microsoft SQL Server Management Studio, Create will also be using Microsoft Azure for its cloud infrastructure. Google apps such as Docs and Sheets will be handling the computing power for the application.

Table 2 Resource Allocation

Resource	Role	Estimated Work Hours
Mitchell Rings	Software Developer	100 +
David Warner	PM & Software Developer	100 +
Contractor	Networking general	10 - 15

BUDGET

Below is a breakdown of all the estimated costs of our project, as well as an estimate of features we may or may not incorporate in the future.

Table 3 Budget

Entity	Description	Overhead
Amazon Web Services Relational Data Service	This is exponential and depends on the amount of storage needed. The amount is based on the number of users using it.	\$ 1,000.00
Amazon Web Services EC2	This will host our production server	\$ 1,000.00
Google API's	This connects us with Google tools such as login information and owning personal drive files such as Google Docs and Sheets.	\$ 100.00
Developers pay	Pay for our development team. Calculated at \$20/hr	\$ 8,000.00
Total	Estimated 100 users w/minimal use	\$ 10,100.00
Total without developers	Estimated 100 users w/minimal use	\$ 2,100.00

METRICS AND EXPECTATIONS

- Should not be greater than 100 visitors to the site within the first year, hosting costs should stay low.

APPROVAL

Table 4 Sequential Approval List

Title	Name	Date 1	Date 2
Software Practicum Advisor	Russell McMahon	12/1/16	4/17/17
Senior Design Advisor	Russell McMahon	12/1/16	4/17/17
Software Developer	Mitchell Rings	11/20/16	4/10/17
Project Manager	David Warner	11/20/16	4/10/17

Use Case Diagram: Create, Information systems creation tool

The following Use case is a breakdown of a coffee shop owner trying to create a system to order the correct amount of coffee cups for his coffee shop. He starts by creating the user input system and allows the employees to enter how many cups they are currently using. The data collected by his new-found tool reports to him the outgoing number of cups for the month and he accurately predicts the number of cups for the next month. All parties involved are pleased.

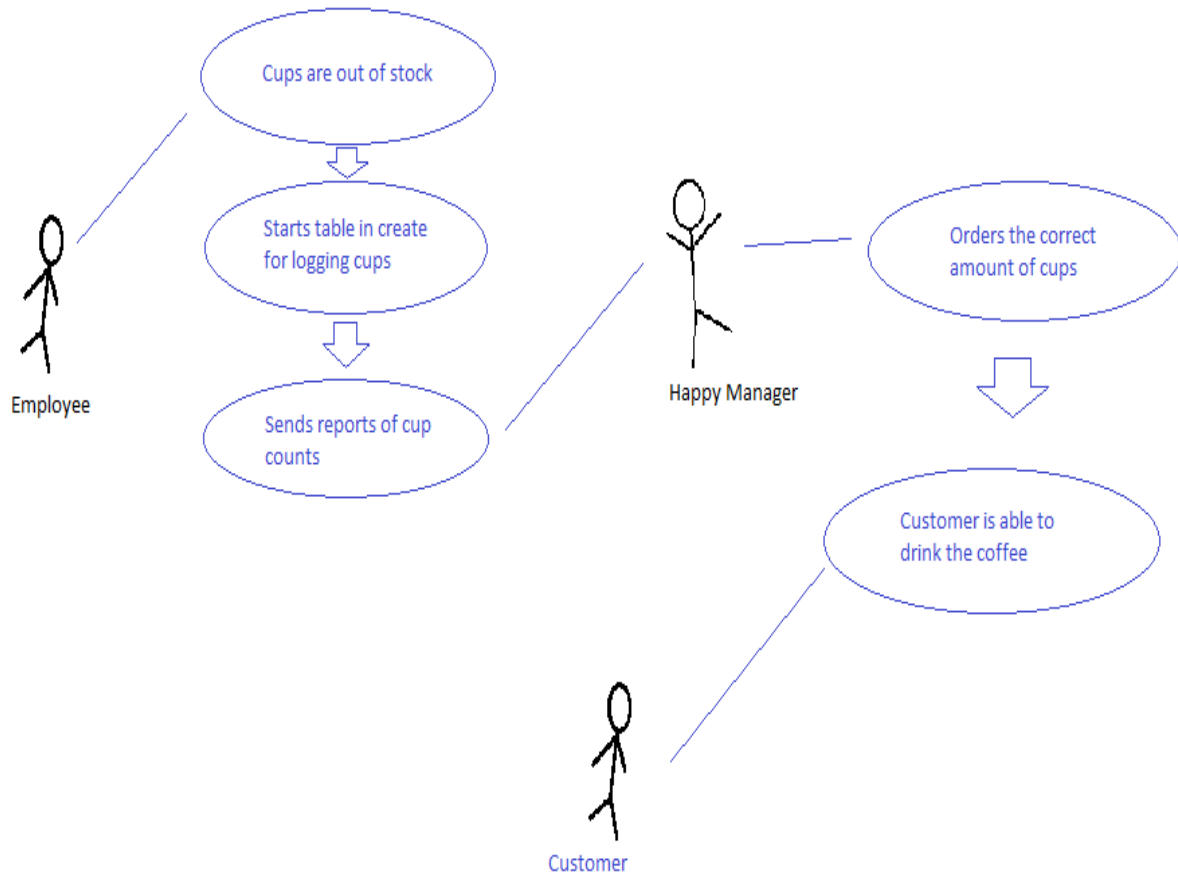


Figure 1: Use case diagram

The following is a work breakdown structure to schedule out the development process of the application. This is similar to waterfall methodologies as each step in the chart is depicted to be after the next. Unfortunately development rarely goes as planned and usually does not follow this structure. Ours was no different.

Task	Task Name	Duration (Days)	Start Date	Finish Date
1.0 Decide Specifics	1.1 Identify customers	2	8/22/2016	8/24/2016
	1.2 Identify purpose	3	8/25/2016	8/28/2016
	1.3 Create name	1	8/28/2016	8/29/2016
	1.4 Determine Feasibility	2	8/28/2016	8/30/2016
2.0 Evaluate Approach	2.1 Create Low Fidelity Prototype	2	8/29/2016	8/31/2016
	2.2 Test with focus groups	1	8/30/2016	8/31/2016
	2.3 Market Data Analysis	2	9/1/2016	9/3/2016
	2.4 Research patents	1	9/3/2016	9/4/2016
	2.5 Medium Fidelity Prototype	4	9/5/2016	9/9/2016
	2.6 More Testing with focus groups	1	9/9/2016	9/10/2016
	2.7 Create Plan for Hosting	2	9/11/2016	9/13/2016
	2.8 Collect Execution Resources	2	9/13/2016	9/15/2016
	2.9 Get Project Sign Off	1	9/15/2016	9/16/2016
3.0 Execution	3.1 Set up servers	2	9/15/2016	9/17/2016
	3.1.1 Install required Software	3	9/16/2016	9/19/2016
	3.1.2 Double check for all required tools	1	9/20/2016	9/21/2016
	3.2 Start developing Usable Front End	16	9/22/2016	10/8/2016
	3.3 Develop back end	50	9/24/2016	11/13/2016
	3.3.1 Userability tests 1	5	11/14/2016	11/19/2016
	3.4 Redeveloping back end	25	11/20/2016	12/15/2016
	3.4.1 Userability Tests 2	5	12/16/2016	12/21/2016
	3.5 Redevelop Back end	15	12/22/2016	1/6/2017
	3.5.1 Front End Development Improvement	20	12/24/2016	1/13/2017
3.5.2 Last Round Userability Testing	5	1/14/2017	1/19/2017	
4.0 Monitor and Control	4.0 Support Tool Creation	15	1/20/2017	2/4/2017
	4.1 Support Plan implementation	5	2/5/2017	2/10/2017
	4.2 Bug Fixing development readiness	5	2/11/2017	2/16/2017
5.0 Closing	5.0 Sign-off	4	2/17/2017	2/21/2017

Figure 2.1: WBS

Figure 2.2: Gantt Chart

This is the second semester Gantt chart, much of this did not go according to plan.

Gantt Chart *(Second Semester)*

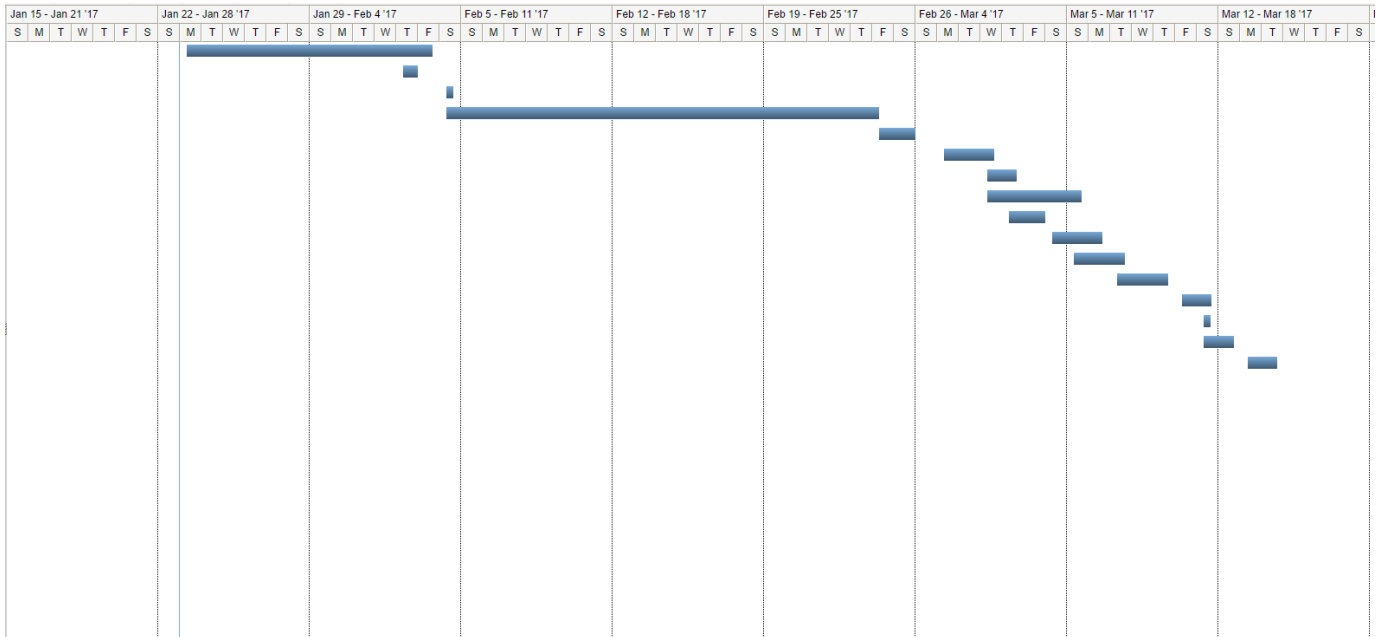


Figure 3.1: Gantt Chart Second Semester

WBS *(Second Semester)*

Name	Duration	Start	Finish
3.0 Front End Material Design touch-up	10d	01/23/2017	02/03/2017
3.1 Environment Set-up on Windows Azure	2d	02/02/2017	02/03/2017
3.2 Usereability testing of front-end	1d	02/04/2017	02/04/2017
3.3 Back-end development initiation	60d	02/04/2017	02/24/2017
3.4 Development Rough Completion Check	5d	02/24/2017	02/26/2017
3.5 Finalizing	7d	02/27/2017	03/01/2017
3.6 (Tentative) write Google app add-ons part 1	4.13d?	03/01/2017	03/02/2017
3.7 (Tentative) write Google app add-ons part 2	13.13d?	03/01/2017	03/05/2017
4.1 Phone implementation	5d	03/02/2017	03/04/2017
5.1 User-ability testing round 1	7d	03/04/2017	03/06/2017
5.2 Bug fix as needed	7.13d?	03/05/2017	03/07/2017
5.3 User-ability testing round 2	7.13d?	03/07/2017	03/09/2017
5.4 Last Developmental phase (Bug fixes)	4.13d?	03/10/2017	03/11/2017
6.0 Initial Release	1d?	03/11/2017	03/11/2017
6.1 Gear for support team	4.13d?	03/11/2017	03/12/2017
7.0 Sign Off	4.13d?	03/13/2017	03/14/2017

Figure 3.2: Gantt Chart Second Semester

CONCLUSION

Some of the tools we used include, SQL server for our database which we intended to use on Ubuntu. The next semester we switched to Amazon's relational database services to host our database. We also used Microsoft's .Net to develop our application, Google's developer tools, such as a handful of their API's for material design as well as accessing their apps, Trello for our project management, timeliness, and meeting sprint objectives, slack for communication, and last but not least the G Suite which we used for several things including the main functionality of the app. We hope Create will be a popular tool for years to come and essential for any growing business. Saving time and money for everyone.

REFERENCES

1. Linton, Rob. *Amazon Web Services: Migrating Your .NET Enterprise Application*. Packt Publishing Ltd, Jul 22, 2011.
2. Sharp, John. *Microsoft Visual C# Step by Step*. Microsoft Press, Oct 28, 2015.
3. Varga, Stacia. Cherry, Denny. D'Antoni, Joseph. *Introducing Microsoft SQL Server 2016*. Microsoft Press, 2016.



APPENDIX

The undersigned accept this Final Problem Statement in its totality.

Print First and Last Name	Title	Signature	Date
Print First and Last Name	Title	Signature	Date
Print First and Last Name	Title	Signature	Date
Print First and Last Name	Title	Signature	Date
Partner (Printed Name)	Partner (Signature)		Date
Print First and Last Name	Title	Signature	Date

Note: Additional signatures might be required if the document changes significantly per the client's request.