

ITM 295R/CIT 295 Practicum Project Plan and Progress

Before the Semester

1. Study the "ITM 295R/CIT 295 Project Proposal and Course Work Requirements" document
2. Find a service project
3. Meet with your project sponsor and conduct the requirements analysis study such that you can complete Item 5 below
4. Fill out every item in **blue**
5. Create a weekly plan by filling out the "**This week's goal**" field for **all 13 weeks**
6. Fill out **Tasks** for Week 1 (should not be the "initial meeting" as you already had one)
7. Email this document to the instructor for approval

At the End of Each Week during the Semester

8. Fill out every item in **green** for that week ("Week *n* Journal")
9. Fill out **Tasks** for the coming week ("Week *n+1* Plan")
10. Insert photos / screen captures as appropriate in Section 7. "Photos, Screen Captures, etc."

At the end of the Semester

11. Fill out Section 6. "Project Evaluation"

1. About You

Name	Austin Bowler
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2. About Your Project Sponsor, Client or Supervisor (you must have one)

Organization	Aspen Grove Family Camp and Conference Center
What they do	Provide family and team strengthening programming/conferencing.
Name	Annalaura Solomon
Contact Info	
How you know the sponsor	I grew up experiencing their lifechanging programming and want to contribute to other people's experiences. Also, as full disclosure, I work for this organization and will be tracking my volunteer hours separately. I will keep an extremely detailed log to prove my service was rendered completely independently and outside of working hours. I will not be paid at all for this project.
The initial meeting date	July 1, 2022 (for initial meeting). August 3, 2022 (for detailed discussion).

3. Your Service Project

Type ¹	Systems Analysis and Design
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¹ Type may be WDD, software development, automation, DB, networking, security, system administration, systems analysis and design, project management, testing, teaching, LAB development, technical support, consulting, or others (name your own) that best describe what you will do.

Describe what you will do in details, including the overview, scope, features, components, deliverables, etc.	I will be designing and implementing the hardware, software, and network structure for digital signage around Aspen Grove campus. This signage will consist of five flatscreen displays which operate on limited capacity operating systems, connected to each other via a network. All of the signs will be controlled by a single computer in the main office. Each sign must have the ability to be individually customized, but also to sync with each other. There will be two exterior signs which must be all-weather resistant. Each sign will display a combination of individualized informational and pictorial messages meant to guide guests around the campus and inform them of daily and weekly activities, mealtimes, and more. The deadline for my project is by the end of the semester; by doing this project for Aspen Grove, I am filling a need they would otherwise not be able to have for years to come. The budget is also semi-loose, at 3-5 thousand dollars. I am urged to stay as close to three thousand as possible.
Resource needed / used	Related hardware, software platforms with the ability to have limited capacity (Linux, certain Windows versions, etc.), Common programming languages used in developing a network application for managing the signage, cooperation from various departments including HR and Marketing for content.
How you found this opportunity	Simply by asking what was needed.
How it will benefit others	This will make the guests at Aspen Grove more efficiently take advantage of the unique experiences and opportunities that are offered. It will also help spread valuable information to guests as needed.

4. Weekly Schedule (when you plan to do your project):

Where	Aspen Grove campus
When (day & time of the week)	MTWRF 5:00pm – 6:00pm (longer, if necessary, on coordinating days)

5. Weekly Plan and Journal

Week 1 Plan	This week's goal - Plan for hardware specifications Tasks - Begin sorting out budget - Research desired hardware - Compare vendors - Put together preliminary budget plan
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Week 1 Journal	Hours Worked This Week: 5 Total Running Hours: 5 What you did this week (your accomplishments): • I accomplished all of my tasks and got a little ahead on researching software specifications for next week. Reflection (your thoughts and feelings): • I feel like this week was a good learning week for me, because I was tasked by my supervisor to create a budget spreadsheet with several different package options for hardware and associated vendors. This is the first time I have done something like that, and I think it went well.
Week 2 Plan	This week's goal • Plan for software specifications Tasks • Determine suitable type of software • Determine OS requirements • Explore software vendors and compare to self-programming • Create a spreadsheet to compare
Week 2 Journal	Hours Worked This Week: 5 Total Running Hours: 10 What you did this week (your accomplishments): • This week I completed my goal and all of my tasks. I put together package spreadsheets for software and determined the kind of OS and software capabilities I require. I also selected vendors for some services. Reflection (your thoughts and feelings): • I think this project is definitely fit to test my abilities in hardware and software design. I also realize that I will have to also exercise my knowledge in network design, and I am actually very happy about the challenge. The hardest part about this is that the farthest one of them from the server computer is about one city block!
Week 3 Plan	This week's goal • Coordinate hardware specifications and software capabilities Tasks • Communicate with software vendors • Communicate with hardware vendors • Run test environments

Week 3 Journal	Hours Worked This Week: 6 Total Running Hours: 16 What you did this week (your accomplishments): • This week I was able to do some serious planning with my project supervisor. She and I talked about the benefits and disadvantages of using different hardware and software combination possibilities. We settled on what hardware brands and types we wanted to use. I also began communicating via email with vendors and laid down the foundations for test environments. Reflection (your thoughts and feelings): • This week was a good work week. I got a lot of nitty-gritty research done, and it seems like my project is starting to become more physically real.
Week 4 Plan	This week's goal • Plan for network specifications Tasks • Coordinate with Mark Longhurst at BYU about the Aspen Grove network • Plan for connectivity over the various large spaces • Address and research possible security concerns.
Week 4 Journal	Hours Worked This Week: 5 Total Running Hours: 21 What you did this week (your accomplishments): • I was able to talk with the management team at Aspen Grove about the onsite network and communicated with one of Mark's students (he was a little too busy this week to talk in person). • I had a meeting with my supervisor to talk about what hardware we will need for long-distance connectivity (in lack of Wi-Fi solutions). • My supervisor and I also discussed security issues surrounding those hardware solutions. Reflection (your thoughts and feelings): • This week I made good progress in the field of communication. Many people are now on the same page as of this week, and now the project is in a position where it can make physical progress instead of just planning progress.
Week 5 Plan	This week's goal • Obtain network and computer hardware and begin setting up the environment Tasks • Order/Buy the necessary equipment

	• Begin physical hardware setup • Begin test-running setup
Week 5 Journal	Hours Worked This Week: 5 Total Running Hours: 26 What you did this week (your accomplishments): • Cemented hardware list. • Re-evaluated the budget. • Re-evaluated the software/hardware pros and cons spreadsheet. • Prepared for budget resubmission. Reflection (your thoughts and feelings): • This week I tried to make a move to purchase required hardware, but my supervisor wasn't prepared to make purchases with the small amount of documentation I was providing her with. I had to spend this week putting together a ton of documentation, and I am hoping to have enough to move forward next week. I definitely set my sights a little too high for this week, but I feel like it was educational at least.
Week 6 Plan	This week's goal • Put together and give a presentation documenting every step of the process. Get purchases approved and transactions made. Tasks • Gather all resources • Make and give a concept presentation • Purchase materials
Week 6 Journal	Hours Worked This Week: 3 Total Running Hours: 29 What you did this week (your accomplishments): • Put together a presentation and gathered more related data. Reflection (your thoughts and feelings): • This week I didn't have the time I needed to fully reach my goal, but I was able to put together a presentation for next week.
Week 7 Plan	This week's goal • Give the presentation and get approval for purchases. Tasks • Schedule a time to give my presentation to the supervisor

	• Give the presentation • Obtain purchase approval
Week 7 Journal	Hours Worked This Week: 5 Total Running Hours: 34 What you did this week (your accomplishments): • Scheduled a time to give my presentation to the supervisor • Gave the presentation • Got approval for some purchases... we have questions about dealers for some items. Reflection (your thoughts and feelings): • This was an extremely productive week for me, and I even think it makes up for last week's disappointing lack of fruits. My supervisor and I decided to wait to physically purchase all of the items until we have figured out where to source some of the others. I do, however, finally have my plan and purchases approved. Our sourcing problem lies in the current computer components shortage, but rumor has it that we may be exiting that long hiatus soon. After all, we can't go back to using the ye-olde Z-80.
Week 8 Plan	This week's goal • Develop a software for sign displays and the management thereof Tasks • Begin diagramming and otherwise designing/planning • Come up with 'Proof of Concepts'
Week 8 Journal	Hours Worked This Week: 5 Total Running Hours: 39 What you did this week (your accomplishments): • I did a lot of research toward the end of my goal. I completed my tasks, but they definitely need some more additions and fine-tuning. Most of my research went into defining an easy-to-use user interface. One past scourge of Aspen Grove digital management software has been complete un-useability, and I will not let anything I design have the same follies. Reflection (your thoughts and feelings): • I look forward to continuing my research and design/development. This program will combine a lot of languages I have learned in my tenure as a

	student at BYU. Now I will have used my education in both hardware and software to complete this project.
Week 9 Plan	This week's goal - Continue developing the program begun in week 8 Tasks - Complete basic 'proof of concepts'
Week 9 Journal	Hours Worked This Week: 4 Total Running Hours: 43 What you did this week (your accomplishments): - This week I did some basic programming (in java but may consider python instead) and diagramming for an object-oriented approach. I also submitted some sketches and other 'proof of concepts' for approval by my supervisor. I also did some preliminary research on the local network. Reflection (your thoughts and feelings): - I am excited for the project to continue on, but I believe the difficulty of finding hardware in the REALLY bad electronics market will cause this project to extend beyond the time limitations of this class. I will, however, continue to work on and complete the project after the class is over. Aspen Grove's purpose is one I believe in greatly, and I want to do my part in helping them achieve it.
Week 10 Plan	This week's goal - Continue developing the program begun in week 8 Tasks - Build basic functions - Build multi-screen interfacing methods
Week 10 Journal	Hours Worked This Week: 3 Total Running Hours: 46 What you did this week (your accomplishments): I completed my weekly tasks and got a little bit more work done than I thought I would have. I wish I could give more accomplishments, but my tasks were simple, and so are bound to be my accomplishments. Reflection (your thoughts and feelings):

	I did not have as much time this week as compared to the usual... I had a work emergency that took up most of my days and nights. I also learned that I need to do some more research before continuing to program. I was, however, able to get in an appropriate number of hours and succeeded in my weekly goals.
Week 11 Plan	This week's goal - Researching and develop the program begun in week 8 Tasks - Do research into multiple-screen control via singular server - Experiment on research with virtual machines - Discuss screen management capability with my project supervisor
Week 11 Journal	Hours Worked This Week: 3 Total Running Hours: 49 What you did this week (your accomplishments): - Although I again did not have much time to work on the project this week, I was able to finally get multiple-screen support working on my program. This was a HUGE step in the project. Reflection (your thoughts and feelings): - I'm glad I did so many extra hours per week regularly, because the last two weeks have been scarce in time. I was also glad to have such a breakthrough in having multiple-screen support, so my project is truly coming to an end... just on time if I do say so myself. I got all of my tasks done too, but I'd like to explore them further next week.
Week 12 Plan	This week's goal - Continue researching and developing the program begun in week 8 Tasks - Experiment on research with virtual machines - Do some polishing on the UI for presentation purposes - Put my nose to the grindstone on framework coding
Week 12 Journal	Hours Worked This Week: 5 Total Running Hours: 54 What you did this week (your accomplishments): - Light VM experimentation - Lots of UI development - Lots of framework coding

	Reflection (your thoughts and feelings): I got a TON of coding work done. In fact, I probably have over 80 percent of the digital signage management program done. I did use some outside help at points, and it was definitely a good idea. The framework is done, and the UI is all but live tested.
Week 13 Plan	This week's goal - Finish the digital signage management program Tasks - Code like the wind
Week 13 Journal	Hours Worked This Week: 3 Total Running Hours: 57 What you did this week (your accomplishments): - Finished the digital signage management program Reflection (your thoughts and feelings): - I finished the program for functionality. I will continue to develop it even after the end of the semester for aesthetics and further UI building. I will also install the hardware and get everything running as soon as hardware becomes available, but what I have completed so far fills the requirements for this class. I am already proud of the results and can't wait to finish the extra portions.

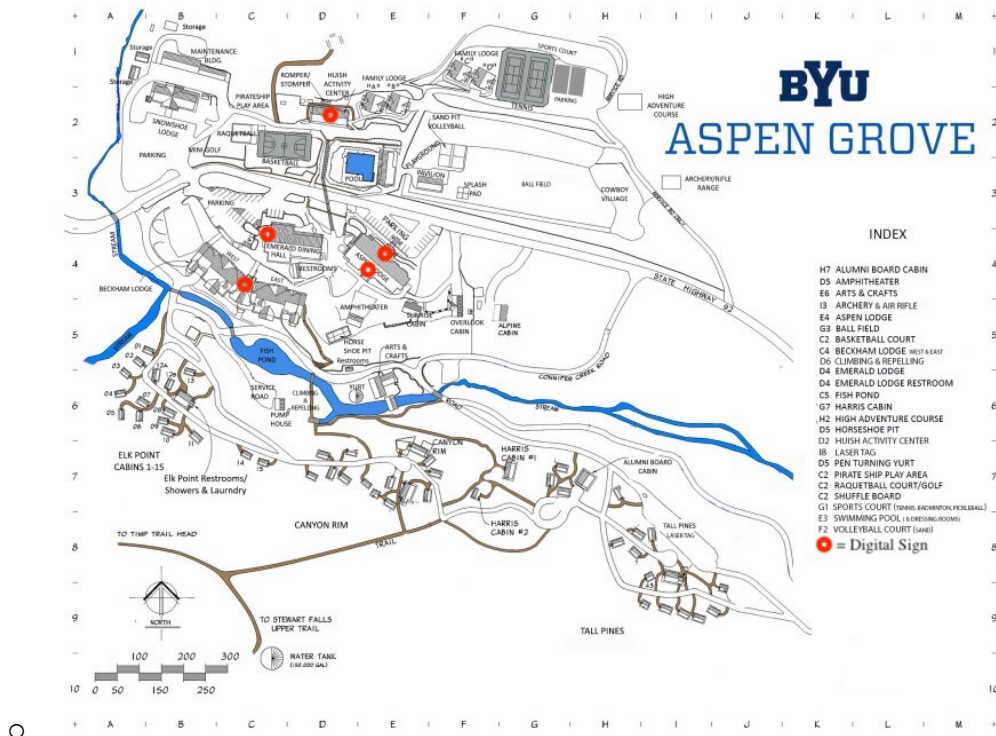
6. Project Evaluation

Links to your project (web, video, photos, presentation, etc.)	Presentation: https://drive.google.com/file/d/1zls3vgysd4ZmSuL95Jqw82AGeL9J1cou/view Visual Aids: https://aspengrove.byu.edu/
How was your presentation experience?	My presentation experience was very fun. I went very in-depth on exactly what the project required and how I achieved what I did. I got to answer some questions about it and loved to hear outside input. I also enjoyed learning about my fellow student's projects.

What did you learn?	Project management: I learned a lot about project development at this scale. I also learned a lot about managing a budget. Technologically: I learned how to create a server that runs several java instances to control multiple digital screen signage displays. I also learned the ins-and-outs of the network I was working with, and how I could make the signs all communicate and connect across a very expansive property. Among other things, I also learned a great deal about hardware compatibility with each other, operating systems, networks, and programs.
What was most exciting?	Oddly enough, the most exciting thing for me was the research. I loved digging in and figuring out the absolute best system for the needs of my sponsor. Much of my work was spent creating the concept for the system and getting it approved, which I didn't expect at first.
What was most difficult?	The most difficult thing was programming the management software. I spent a lot of time researching how to do it, and even more time (which I did not log) thinking about how I was going to make it work.
Advice to future students	My advice to future students is to keep a personal backup of your work if you are using a sponsor's networked and secured computer; I would have had a lot more to share for visual aids had I had access to my work. However, a lot of my work was a security risk if it left the office (or so says BYU), so in my case this wasn't possible.

7. Photos, Screen Captures, etc. with Caption:

- Map of sign locations:



- Spreadsheet comparing the features of potential vendors and hardware providers (you can zoom in with Microsoft Word, the resolution of the screen capture is big enough). There are more sheets, but these two are the most informational.

The image shows two screenshots of a spreadsheet. The top screenshot is a complex comparison of vendors and hardware providers, with columns for various categories like 'Vendor', 'Product', 'Price', 'Features', etc. The bottom screenshot shows a detailed breakdown of costs for two cases, Case 1 and Case 2, with columns for 'Row Labels', 'Sum of Quantity', 'Sum of Price', 'Sum of Totals', and 'Sum of Percent of Budget'.

Case	Row Labels	Sum of Quantity	Sum of Price	Sum of Totals	Sum of Percent of Budget
CASE 1	Licenses (additional)	1	\$25.00	\$25.00	0.85%
	Subscription (yearly)	1	\$35.00	\$35.00	1.17%
	Computer (Raspberry Pi 4 2GB Basic Kit)	3	\$45.00	\$135.00	4.50%
	Splitter (Wireless HDMI Transmitter and Receiver)	2	\$130.00	\$260.00	8.67%
	Monitor (Hisense 55-inch Class R8 Series)	5	\$450.00	\$2,250.00	75.00%
CASE 1	Grand Total	12	\$685.00	\$2,705.00	90.17%
CASE 2	Licenses (additional)	1	\$25.00	\$25.00	0.85%
	Subscription (yearly)	1	\$35.00	\$35.00	1.17%
	Computer (Raspberry Pi 4 2GB Basic Kit)	3	\$45.00	\$135.00	4.50%
	Splitter (Wireless HDMI Transmitter and Receiver)	2	\$130.00	\$260.00	8.67%
	Monitor (Hisense 55-inch Class R8 Series)	5	\$450.00	\$2,250.00	75.00%
CASE 2	Grand Total	14	\$585.00	\$2,685.00	86.13%

- This is a picture I took quickly as I headed out the door one day. It is of a product we were considering using to keep the digital sign warm in below operating condition temperatures, dry in wet conditions, and cool in above operating condition temperatures. It makes us go well above budget, but it is still being debated. (Scroll down to view)

Beetronics - Professional Display x | 55 inch tv waterproof enclosure x | DeerTV 60" - 65" Outdoor TV E x | cheapest 55 inch tvs - Google S x | Hisense 58" Class 4K UHD LED x | +

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