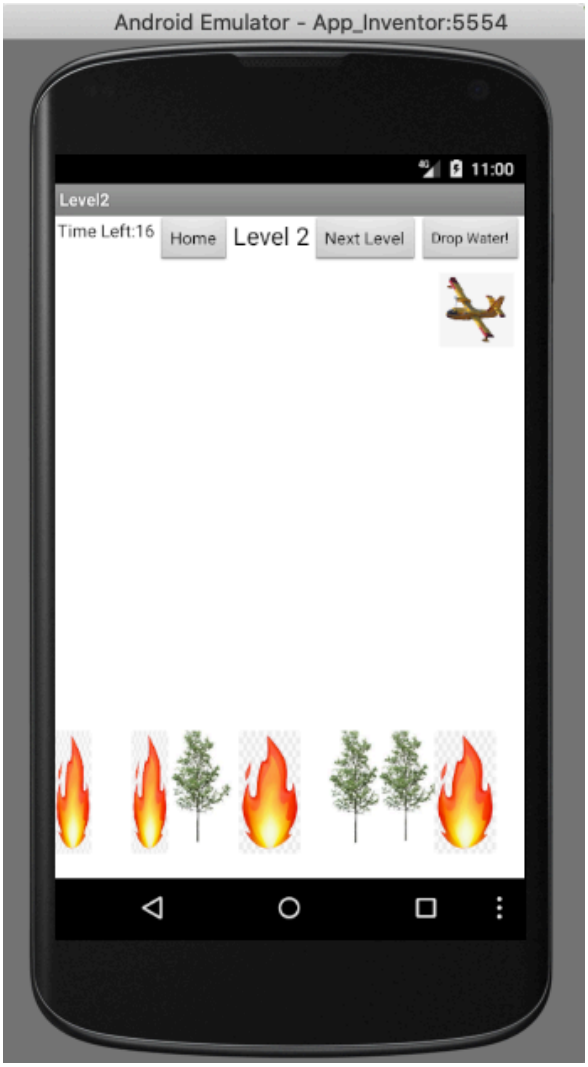
The Fire Extinguishers



Designers: Rohan Nihalani, Alexander Suen

PLTW | Computer Science

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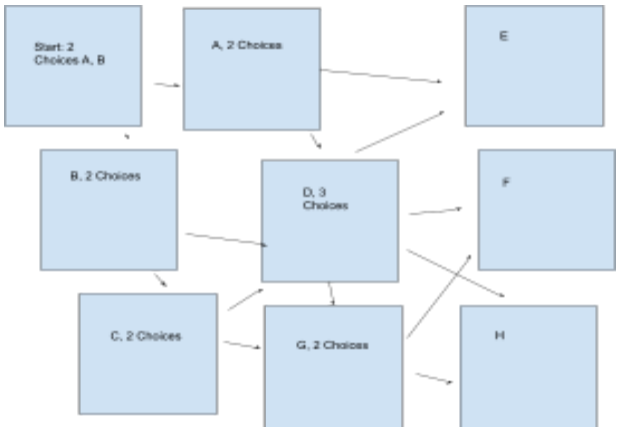
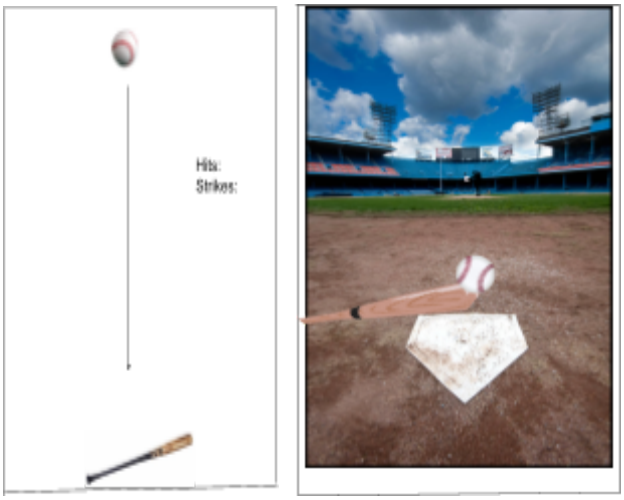
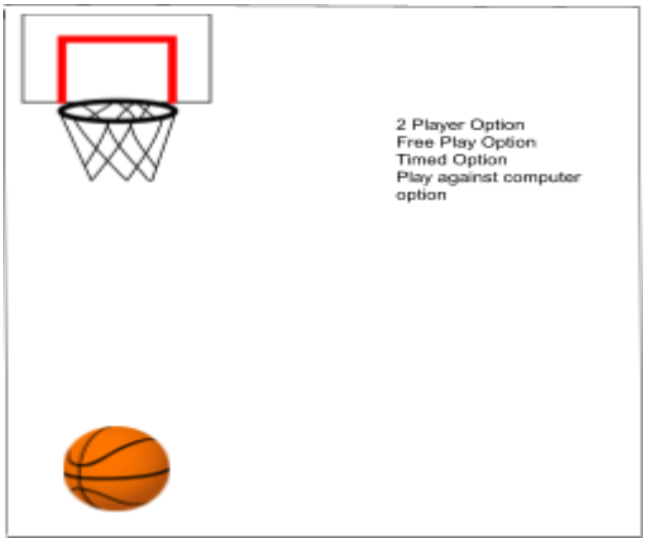
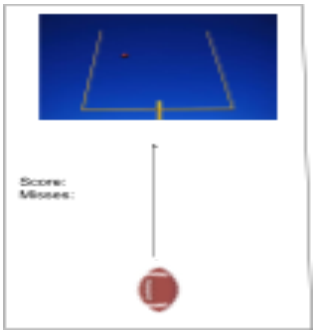
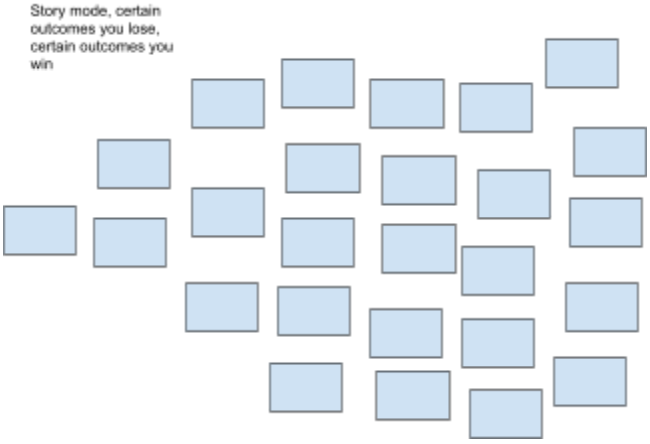
Brainstorming

1. Presidential Election (Story based) Everytime the user chooses a certain scenario, they are given two choices to go through the scenario and if they choose a certain choice, the percentage that they win will increase. Connected to a hot topic news item due to the Presidential Election Coming up.	
2. Baseball Game The user can move around the baseball bat to align it with the baseball. When the baseball touches the bat, it goes towards outerfield and increases the score. The World Series is happening right now.	
3. Basketball Game The user can swipe up towards the hoop and the basketball follows the users finger. If the basketball touches the hoop, then the user gets a point. If it is missed, the total score is deducted by one. Doesn't really relate to a hot topic news item	

4. Football Game The user swipes at a football towards the field goal post and tries to get it between the two lines. Not sure how to make that work in code and for the program to detect it. Couldn't really connect back to a hot topic news item.	
5. Stop the Fire Game(Final Choice) The game starts out as with only a couple fire icons, which the user can put out by tapping the fire extinguisher. Each level gets progressively more difficult as the fires get bigger. This can connect back to a very hot topic news item, fires.	
6. Stop the coronavirus (Story based) Based on your choices that will increase or decrease your probability of stopping COVID-19. This connects back to a hot topic in the news, because we are currently in a pandemic right now.	

Plan & Design Your Solution: SCRUM

Product Backlog

This app is about the wildfires plaguing California at the moment. The user is able to move an airplane over the fires to put them out. As they progress, the levels get harder with shorter time intervals and more fires to put out. There is also a learn more page, where users can learn more about

the wildfires and how to help prevent them, as well as where to donate to help out first responders and families who have been affected by these disasters.

Sprint Planning & Sprint Backlog

Sprint Tasks	**Time Anticipated**
Home Screen • Adding a start button that takes you to level 1 • Adding a flag and a fire emoji for design • Instructions so the user knows how to play	30 minutes +20 minutes
Level one: • Moving the plane around • Putting out the fire • Add a blue sky background • Completing the level by putting out all the fires	2 hours +1 hour
Level two: • More fire • Changing the background to night time • Smaller range, more accurate when putting out the fires	1 hour -30 minutes
Learn more section: • Users can learn about the wildfires and help donate to first responders and families who have been affected Level select screen: • where user can pick the level the start on	10 minutes +- 0 minutes
Level 3: • Smaller time to put out all the fires • Changing the background to the afternoon time • More fire	45 minutes -5 minutes
Level 4: • Smaller time to put out all the fires • More terrain/buildings, make the level look better and more aesthetically pleasing	45 minutes -15 minutes
Level 5: • Smaller time to put out the fires • Buildings to make the level look better and more aesthetically pleasing. • Different terrain	1 hour +-0 minutes

Level 6: • Different terrain, mountains or grass, make levels different for the user • More fire	1 hour -30 minutes
Display stars, based on time left you get 1,2 or 3 stars after the level is over	1 hour +-0 minutes
Add backgrounds to all levels	20 minutes -10 minutes
Level 7 • More buildings and different terrain to make it better looking and keeps the game interesting • More fire	1 hour +50 minutes
Level 8 • More buildings and different terrain to make it better looking and keeps the game interesting • More fire	1 hour +45 minutes
Story Mode: • Play through a story as you train to become a fighter fighter • Lots of different outcomes and paths • 2 stages of tests, if the user beats the test they advance to the next stage • Previous choices in the multiple choice section will influence how hard the test is that they have to take	3 hours +3 hours

Sprint 1 (Monday 10/26)

To do	**Working on**	**Finished**	**Time Anticipated**	**Actual Time**
		Home Screen:**Rohan** • Adding a start button that takes you to level 1 • Adding a flag and a fire emoji for design • Adding Instructions for the user	30 minutes	+20 minutes
		Level one: **Alexander** Moving the plane around • Putting out the fire • Completing the level	2 hours	+1 hour

		Level two: **Alexander** More fire • Smaller range • Harder than level one	1 hour	-30 minutes

Sprint Review: The emulator crashed on first try. Try to change the background like adding a picture to the background. Add more graphic design to the level select, add some instructions. Add more to the game, different playing modes and story mode.

Retrospective:
Alexander: Our partnership is doing good because there is communication and also agreement with how we should proceed onto the next sprint. We communicate on a regular basis to check in on what each one is doing and sharing AIA files through Google Drive. Something that we could do better is making sure that we read all the instructions before jumping in and starting the project to not lose points.

Rohan: We are working together on the project very efficiently and are able to communicate with each other on a daily basis and help each other when necessary. One thing we could do better is being more efficient with our time that we get in class to talk, we could spend more time working out problems together.

Home Screen AIA File
Level 1 AIA File
Level 2 AIA File
Final Sprint 1 AIA File

Sprint 2 (Before Thursday 10/29)

To do	**Working on**	**Finished**	**Time Anticipated**	**Actual Time**
		Learn more section: **Alexander** Level select screen, where user can pick the level the start on	10 minutes	+- 0 minutes
		Level 3: **Alexander** • Smaller time • More fire	45 minutes	-5 minutes
		Level 4: **Alexander** • Smaller time • More terrain/buildings	45 minutes	-15 minutes
		Level 5: **Rohan** Smaller time	1 hour	+-0 minutes

		• More • buildings • Different terrain		
		Level 6: **Rohan** More buildings • Different terrain • More fire	1 hour	-30 minutes

Retrospective:
Alexander: I think that we need to be a little more commutative and be more focused because sometimes we would take a long time to send AIA files to each other and not do it on the days that we scheduled. Also, we should be a little more accurate on our timelines and not make ourselves feel like we have too much work.

Rohan: We should be more communicative because sometimes we don't talk for several days. I think this is because we planned everything out in class and worked well on planning ahead. We had some problems with the emulator always crashing but never told each other until we saw. A fix for this would be to text each other that we had this problem and send over the AIA file to see if the other could fix it.

Sprint Review: Sometimes the app is laggy and takes a lot of time to load. Even when the plane is above the fire still doesn't get extinguished. We could make the display more organized and aesthetically pleasing. We should add backgrounds to make the app seem more realistic. In later levels add more terrain or different objects to differentiate the earlier levels from the later ones. The plane was not realistic in size compared to the fires, making the plane bigger, size things more appropriately. Based on this feedback we decided to add another sprint, which includes a star system, so beating the level isn't the only goal. We will also add background pictures to make the levels more realistic. We will add 2 more levels with new terrain and objects. We will also add a story mode so the user doesn't get bored of the level gameplay.

Level Select AIA File
Level 3 and 4 AIA File
Level 5 and 6 AIA File
Final Sprint 2 AIA File

Sprint 3 (Before Monday 11/2)

To do	**Working on**	**Finished**	**Time Anticipated**	**Actual Time**
		Stars system: **Alexander**	1 hour	**+-0 minutes**

		Based on time left you get 1,2 or 3 stars		
		Add background pictures for all the levels **Rohan**	20 minutes	-10 minutes
		Level 7: **Alexander** • More buildings • Different terrain • More fire	1 hour	+50 minutes
		Level 8: **Alexander** • More buildings • Different terrain • More fire	1 hour	+45 minutes
		Story Mode: **Rohan**	3 hours	+3 hours

Star System AIA File
Level 7 and 8 AIA File
Story Mode and Backgrounds AIA File
Final Sprint 3 AIA File

Final Sprint Review

During this project, the things that went well were that we were able to increase our communication between the two of us and successfully plan our project. We also were able to incorporate all of the features we wanted into our project in the time we were given to finish this project. Sometimes we weren't able to fix some issues for a long time and we believe that we could fix this by sending AIA files to each other when we have a problem instead of just trying to fix it ourselves. If we were to repeat this project/process all over again, we should try to prioritize our documentation over the code because we originally didn't do some of the documentation correctly and lost points.

Evaluation of the Solution

Format TBD, there are some potential limitations. I will give instructions and additional materials to insert here later.

Final Product & Justifications

The hot topic news item that our product incorporates is the devastating wildfires that have been plaguing California. We both decided to choose this hot topic because we believed that it was a

problem that it hurt lots of people and their loved ones and wanted to make more people aware about it. In addition, spreading awareness about events that are not only happening in California, but other places around the world as well. We also intended to help spread awareness towards the first responders, who are working tirelessly to help keep our community safe from these fires.

Video Demonstration

Final AIA File

Final APK File

Our app works best on a Mac Emulator

Our app has a game, an information section, and a story mode option. For the game, the user has to put out a number of fires before a certain time limit to go onto the next level. The information section links to a Red Cross Wildfire prevention site, where users can learn more about how to help and stop the wildfires. The story mode option is when users go through a series of tests and mini games to see if they can become a firefighter. The game is designed to show the difficulty of putting out fires and the hard work first responders go through to keep the community safe. The information section's purpose is to give the users a resource to donate and help the first responders. We put a story mode option because we wanted to know what it was like to be a firefighter and the some traits they all possess.

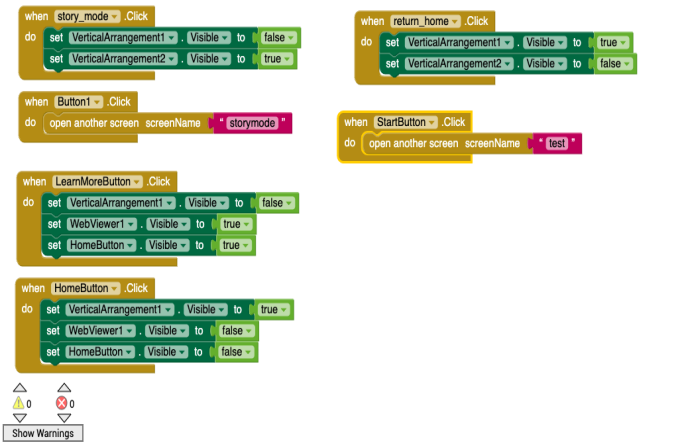
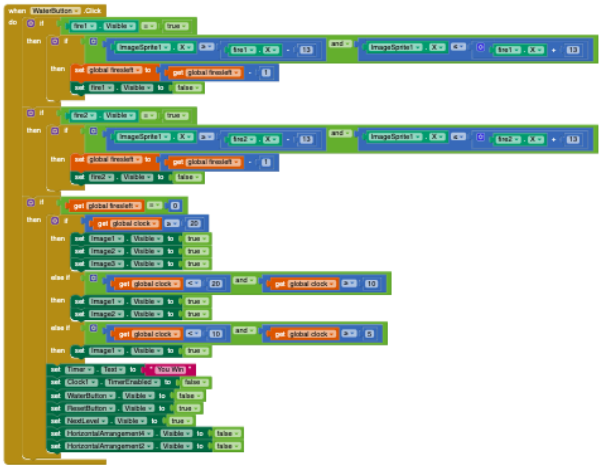
Self Evaluation & Final Project Code

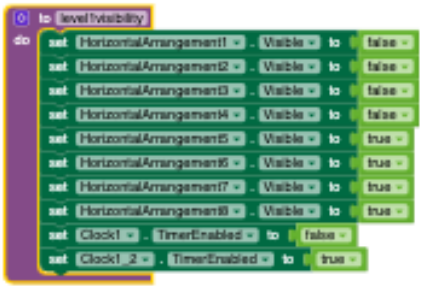
Interpretive Performance Guide

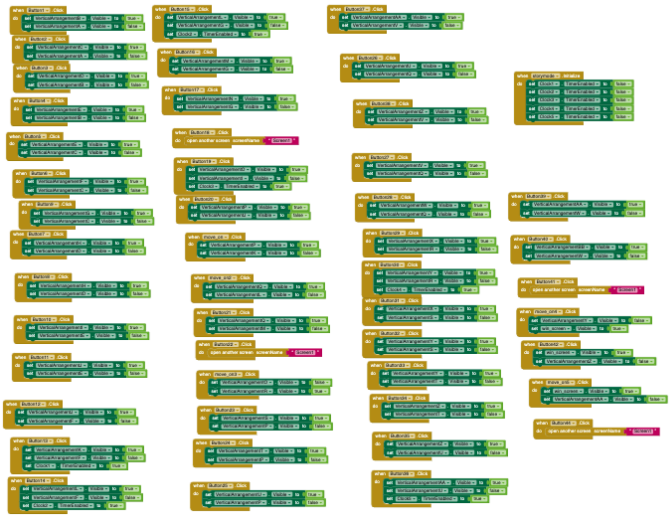
Based on the Guide My partner and I would get: **16**

Program Code

Screen Captures	Comments

	These are the Screen 1 functions, it is the control screen and here users are able to decide which screen they want to go to, whether that's the story mode, levels, or learn more pages.
	Here is the base code for the level, the code would see if the plane the user is controlling is within a certain area of the fire, if that's true, the fire will be extinguished. Once all the fires are extinguished, the user will have beat the level. There is also a star system that based on how much time is left when the user beats the level, that will correspond to how many stars the users will get.
	The clock will put pressure on the user while they are trying to complete the level, the clock will countdown starting from the time allowed for that level. Once the clock hits zero, the user will lose and won't be able to move the plane or extinguish the fires anymore.

	The reset button will become visible after the user has either beaten the level, or failed it, if they beat it they also have the option to move on to the next level. Once the user clicks the reset button all the global variables will be reset, this includes the “firesleft”, and the “clock” variables. This will also set all the fires visibility to true as well as all other functions of the level.
	The global variables vary based on the level, as the levels get harder, the firesleft will increase and the clock will decrease. The other function controls the plane the user can move back and forth, the user can only control the x coordinate of the plane, so the plane can only go back and forth on the x-axis.
	This is the level visibility set up. Since we put 2 levels on one screen, we can’t have both showing at one time. Once the user completes the level before, the visibility setup will set all the horizontal arrangements that affected the level before to set the visibility to false. While also setting all the next levels horizontal arrangements visibility to be true. It will also set the clock to start running.
	All of the blocks for this part of the story mode are minimized because they take up a lot of space. Since there are 5 different tests there are 5 rows. The first column is the basic fire functions column. The second column controls the clocks for the tests, the third controls what happens when the home button is clicked, the fourth and fifth are for the global variables, and the sixth is for moving around the plane.

	This is all the visibility for the story mode, since it's all on one screen, your decisions don't actually take you to another screen, just set another decision's visibility to true. This would control where you go after you make a decision for example, if you were in vertical arrangement A, and you chose option B, the program would set vertical arrangement visibility to false, and vertical arrangement C visibility to true.

Conclusion

Rohan's Reflection:

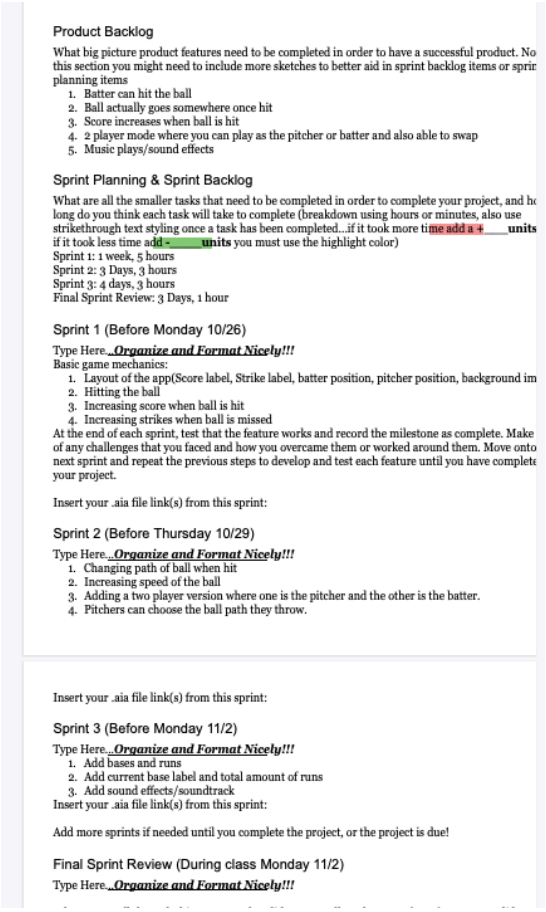
1. During this project, I designed some of the levels for the game, made the whole story mode for our game, and made a learn more page. We had a total of 8 levels for our game and I designed and helped with 2 of them. We also thought it would be a good idea to include a learn more page where users can learn how to help spread awareness for the wildfires that are taking over California. Since our game is about wildfire prevention, I made our story mode centered around training to become a firefighter. The user will start with one question then slowly it will branch out into a lot of different pathways. Then, if the user successfully completes the story mode they win. Each decision is multiple choice and includes a picture and prompt.
2.
    a. The purpose of our program was to help spread awareness to the wildfires currently affecting lots of people, not just in Californias but also other places. Wildfires are a severe thing and should not be taken lightly.
    b. The program integrates math and logical concepts due to the logic required that tells the program whether or not to set the fire visibility to false. If the plane is within a certain parameter of the fire the fire will be extinguished, if not then the fire remains burning.
    c. The timer algorithm counts down from a certain number putting pressure on the user to put out all of the fires, the program subtracts one from the timer every second and once the timer hits 0 the user loses and has to retry the level.
    d. Since we had to put 2 levels on each screen we added a visibility set up using a procedure. The procedure will set all the level one components to invisibile while all the level two components will become visible. This helps us keep the program simple and not have a super complex program.

Alexander's Reflection:

1. For this project, I designed the levels of the game, programmed them, and also made the video demonstration. The design of the game had a draggable plane at the top, along with a drop water and home buttons. When the plane is over the fire, I programmed the fire to not become visible if the user clicks the drop water button. If not close enough, the fire will remain visible. There was also a timer at the top, which added pressure to the game and I programmed it to make the game stop and show a "You Lose" symbol if not all the fires are put out. I also added a star system, which displays stars based on the amount of time left when all the fires are put out. The video demonstration showed how our app works only with text on the bottom to further explain all the three parts of our app. I used Clip Champ to add the text on the bottom and uploaded it to Google Drive to generate a shareable link.
2.
    a. The purpose of our program was to bring awareness to the wildfires plaguing California and help display the severity of wildfires. Since we live in California, we feel the effects of the wildfires and see people who are hurt.
    b. Our program integrates mathematical or logical concepts because in order for the fire to be put out, the x-coordinate of the plane must be +- 7 of the fire's x-coordinate. In addition, we also incorporated a greater than or equal to and less than or equal operator to determine how many stars are displayed after all the fires are put out.
    c. The algorithm of the timer counts down the time by getting the previous time stored in a global variable and subtracts one from it. It also stores that value into the global variable and joins it with the text "Time Left:" to display the time left.
    d. On the story mode, we decided to put all the questions and levels on the same screen. This allowed us to give the user a quicker experience because the app wouldn't have to constantly switch between screens. To do this, we put all the horizontal arrangements in the same spot and just changed the visibility at the appropriate time. It kept the program simple and reduced the number of screens that we had in total.

Project Log

Alexander Suen	Rohan Nihalani
10/19: In class today, we worked together to brainstorm some possible ideas for the project. We ended up choosing a baseball game because the World Series was coming up. We figured out our schedule and the due dates of each sprint. We also planned out what would be in which sprint and how the app would work and look.	10/19: In class, we finished up most of the brainstorming part for our project. We brainstormed different ideas and decided to go to a baseball game. We chose this because the World Series is coming up. We planned out the dates of each sprint and what to do for each one.



Product Backlog

What big picture product features need to be completed in order to have a successful product. No this section you might need to include more sketches to better aid in sprint backlog items or sprir planning items

1. Batter can hit the ball
2. Ball actually goes somewhere once hit
3. Score increases when ball is hit
4. 2 player mode where you can play as the pitcher or batter and also able to swap
5. Music plays/sound effects

Sprint Planning & Sprint Backlog

What are all the smaller tasks that need to be completed in order to complete your project, and hc long do you think each task will take to complete (breakdown using hours or minutes, also use strikethrough text styling once a task has been completed...if it took more time add a +____**units** if it took less time add -_____**units** you must use the highlight color)
Sprint 1: 1 week, 5 hours
Sprint 2: 3 Days, 3 hours
Sprint 3: 4 days, 3 hours
Final Sprint Review: 3 Days, 1 hour

Sprint 1 (Before Monday 10/26)

Type Here...***Organize and Format Nicely!!!***
Basic game mechanics:

1. Layout of the app(Score label, Strike label, batter position, pitcher position, background im
2. Hitting the ball
3. Increasing score when ball is hit
4. Increasing strikes when ball is missed

At the end of each sprint, test that the feature works and record the milestone as complete. Make of any challenges that you faced and how you overcame them or worked around them. Move onto next sprint and repeat the previous steps to develop and test each feature until you have complete your project.

Insert your .aia file link(s) from this sprint:

Sprint 2 (Before Thursday 10/29)

Type Here...***Organize and Format Nicely!!!***

1. Changing path of ball when hit
2. Increasing speed of the ball
3. Adding a two player version where one is the pitcher and the other is the batter.
4. Pitchers can choose the ball path they throw.

Insert your .aia file link(s) from this sprint:

Sprint 3 (Before Monday 11/2)

Type Here...***Organize and Format Nicely!!!***

1. Add bases and runs
2. Add current base label and total amount of runs
3. Add sound effects/soundtrack

Insert your .aia file link(s) from this sprint:

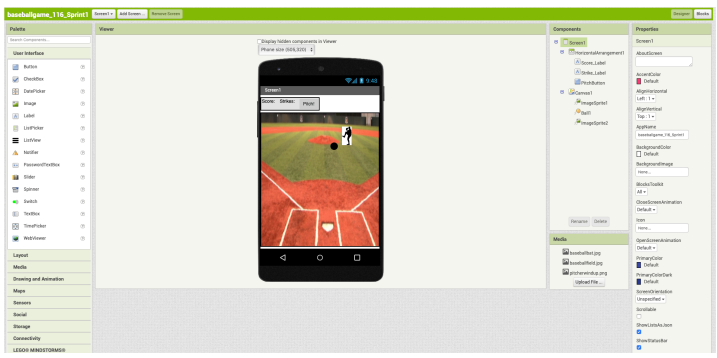
Add more sprints if needed until you complete the project, or the project is due!

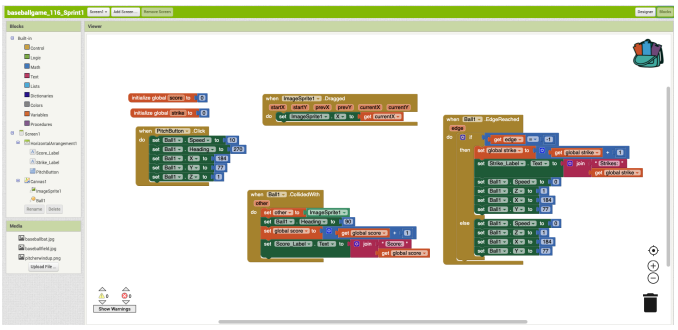
Final Sprint Review (During class Monday 11/2)

Type Here...***Organize and Format Nicely!!!***

10/20: After school today, I started working on Sprint 1. I started with designing the layout of the app by adding a baseball field in the background, an image sprite, and a ball. I programmed the ball to start moving with a speed of 10 and a heading of 270 when the pitch button was clicked. I also made it so that if the ball touched the south edge of the screen, it would be considered a strike. When the bat touched the ball, I changed the ball's heading to 90 so it would go towards the outer field.

10/21: I started designing the layout for the app for Sprint 1. I added images of the baseball field and an image sprite for the baseball. I added a couple of screens, a home screen, and a single player screen. I also added some images into the home screen to make the app seem less dull.





10/22: The pair of us figured that our baseball

10/22: We decided that the baseball game didn't

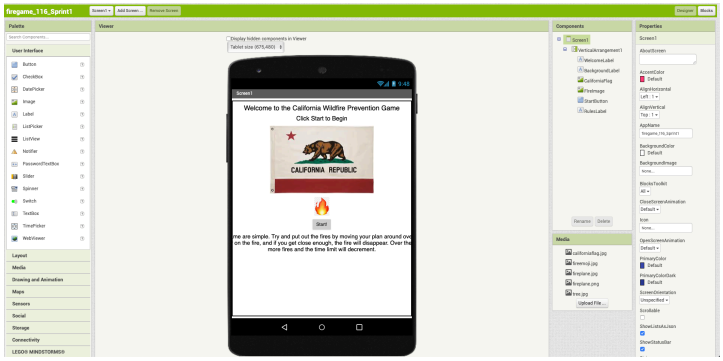
game wasn't relevant to the hot topic requirement. To solve this, we changed our design to a fire prevention game. We reengineered the brainstorm to fit our new game idea and changed all the sprint descriptions.	connect to a hot topic news item enough. Therefore, we decided to go with a fire prevention game.

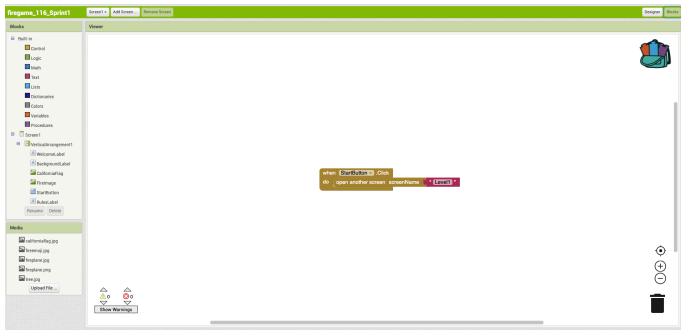
Sprint Tasks	Time Anticipated
Home Screen • Adding a start button that takes you to level 1 • Adding a flag and a fire emoji for design • Instructions so the user knows how to play	30 minutes
Level one: • Moving the plane around • Putting out the fire • Add a blue sky background • Completing the level by putting out all the fires	2 hours
Level two: • More fire • Changing the background to night time • Smaller range, more accurate when putting out the fires	1 hour
Learn more section: • Users can learn about the wildfires and help donate to first responders and families who have been affected Level select screen: • where user can pick the level the start on	10 minutes
Level 3:	45 minutes

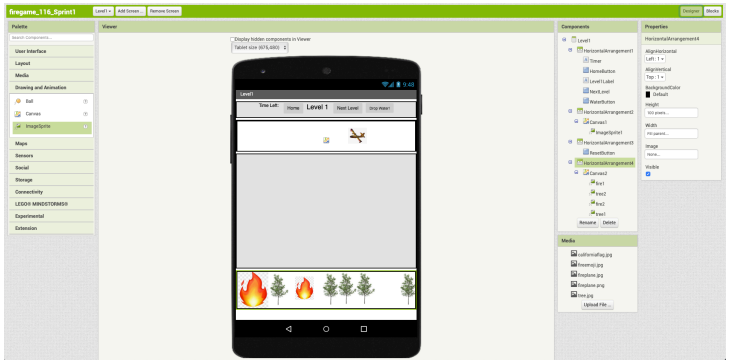
• Smaller time to put out all the fires • Changing the background to the afternoon time • More fire	
Level 4: • Smaller time to put out all the fires • More terrain/buildings, make the level look better and more aesthetically pleasing	45 minutes
Level 5: • Smaller time to put out the fires • Buildings to make the level look better and more aesthetically pleasing. • Different terrain	1 hour
Level 6: • Different terrain, mountains or grass, make levels different for the user • More fire	1 hour
Display stars, based on time left you get 1,2 or 3 stars after the level is over	1 hour

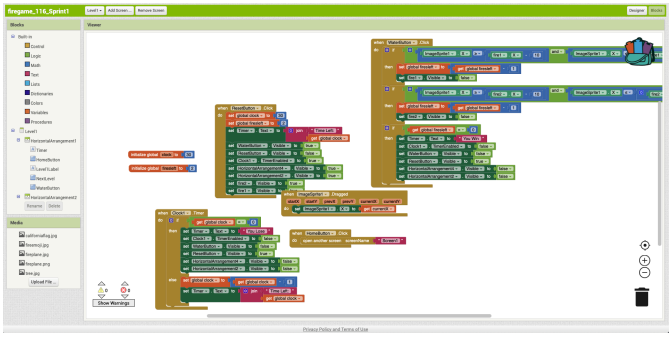
Level 7 • More buildings and different terrain to make it better looking and keeps the game interesting • More fire • Add Sound to play when the fire is extinguished and when the user completes or fails the level	1 hour
Level 8 • More buildings and different terrain to make it better looking and keeps the game interesting • More fire	1 hour
Level 9 • More fire • Smaller time for the user to extinguish all the fire	1 hour
Level 10 • Big level with many hard tasks to complete in order to finish the level • Lots of fire • Small time to put out all of the fires • Kind of like a boss level	2 hour

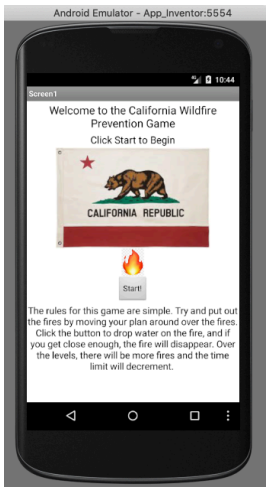
10/23: Today I worked on the first sprint of our new idea. I created a home screen, with the instructions of the game and a start button. The next screen I created was level 1. I added a plane sprite, tree images, and fire images. I also added multiple buttons including a home button, a next level button, and a drop water button. At the top middle, there is a label displaying which level you are on. I also added a timer on the side to add a little pressure to the game. When the plane is above the fires and the drop water is clicked, the fire disappears. The next screen I created was level 2. I copied the design from the previous level and added more fires. In the code, I changed the amount of time the user had to a lower amount to make it harder. I also made the range in which the fire would disappear when the water button was clicked smaller to make it harder as well.	10/25: Today I worked on all of the sprint planning for our app. Since we decided to swap our app idea we had to still do all of the sprint planning. I made a detailed sprint plan for sprint number one, as well as rough plans for sprint 2 and 3. We are going to create the main game in sprint one, which includes 2 levels as well as the home screen and layout of the app. For sprint 2 we are going to add a learn more section where our users can learn more about our current situation with the wildfires, they can also learn about how to donate to first responders and people who have been affected by these dangerous fires. I also helped Alex with Sprint one by helping him add a level select screen where you can directly access each level through there. Lastly, I went over all the code and formatting for sprint one and made changes where I felt our app could be improved upon.

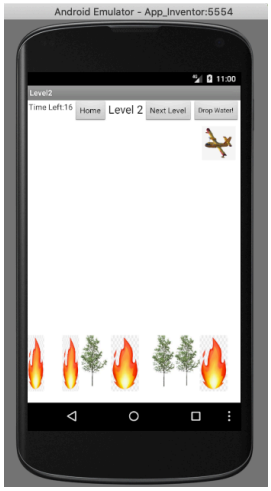


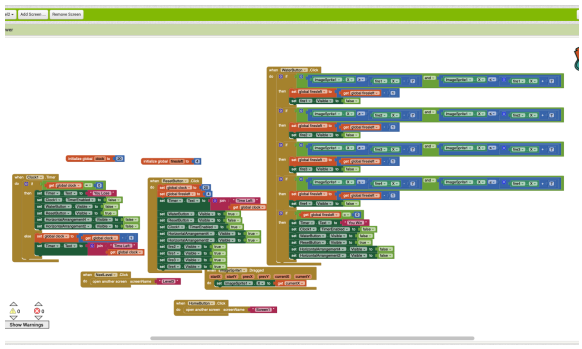






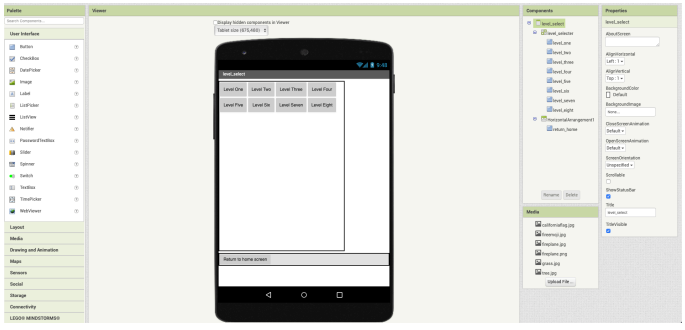


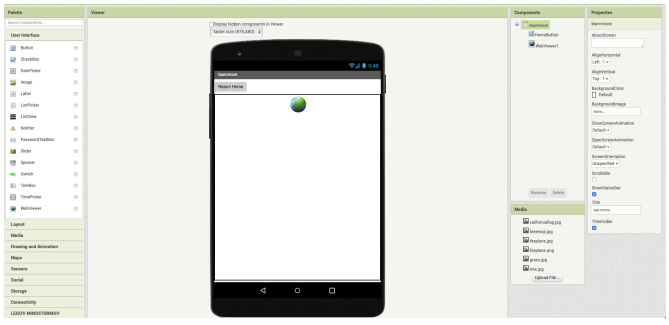


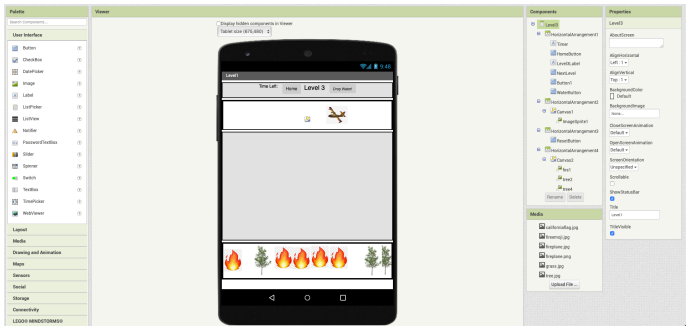


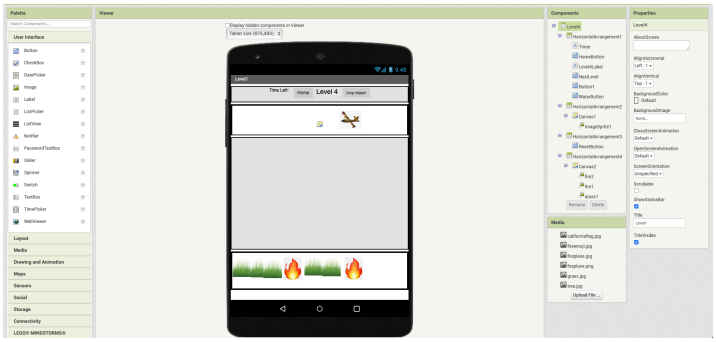
10/26: Today I worked on the second sprint of the project. In this sprint, I added Levels 3 and 4. In level 3, I added more fire to the game and also found out a bug in the app. The bug was that the user could tap multiple times over a fire that was already extinguished and eventually win the game. I fixed this by checking if the fire had already been put out by seeing if it was visible or not, then proceeding.

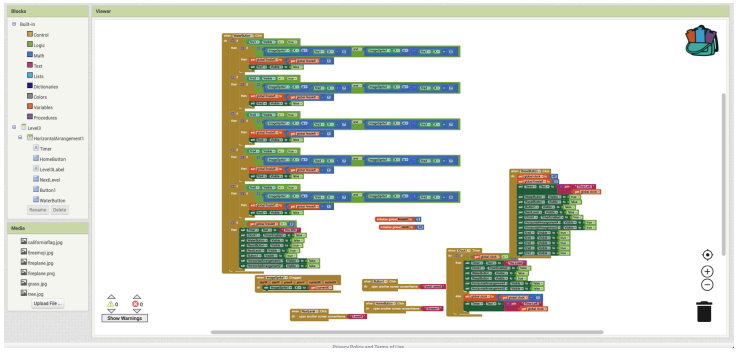
10/28: Today I finished up Sprint 2. In sprint 2 I added a learn more section, where users can find out about these dangerous fires and how they can donate and help the first responders and families who have been affected. I also added levels 5 and 6, which included more fires, different terrain, as well as buildings and mountains. I also went through all the code and finalized it for Sprint 2.

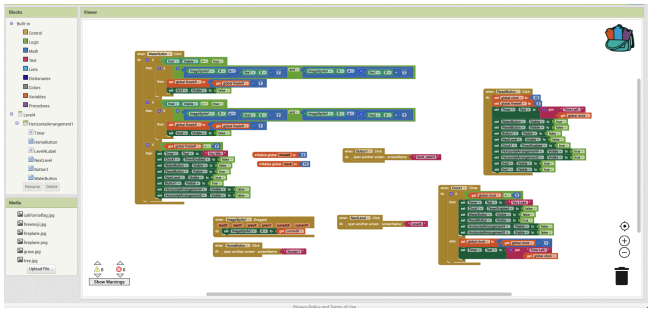


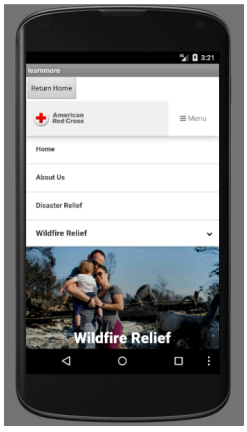


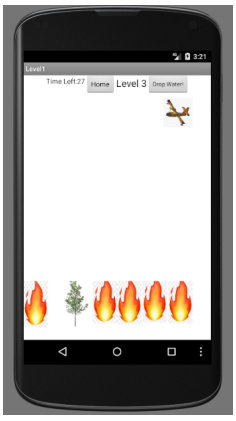


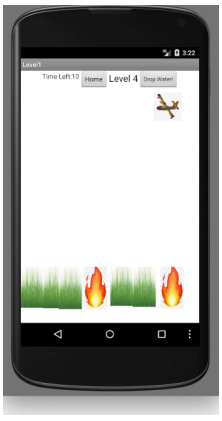


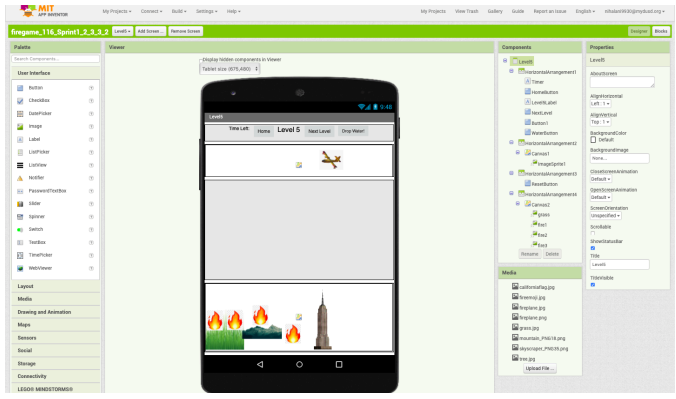


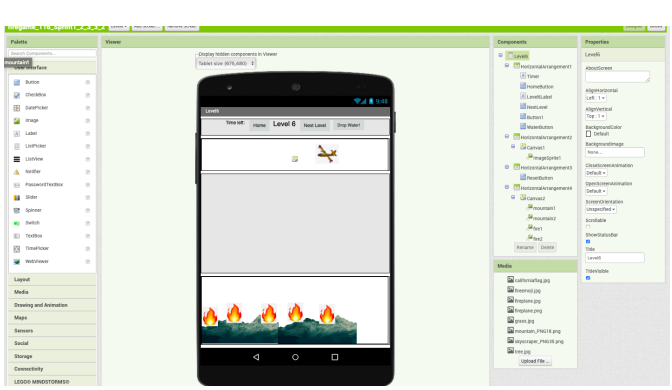


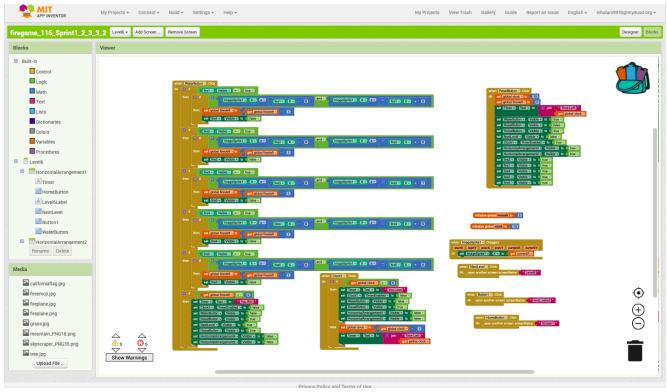

Return Home
American Red Cross
Menu
Home
About Us
Disaster Relief
Wildfire Relief
Wildfire Relief

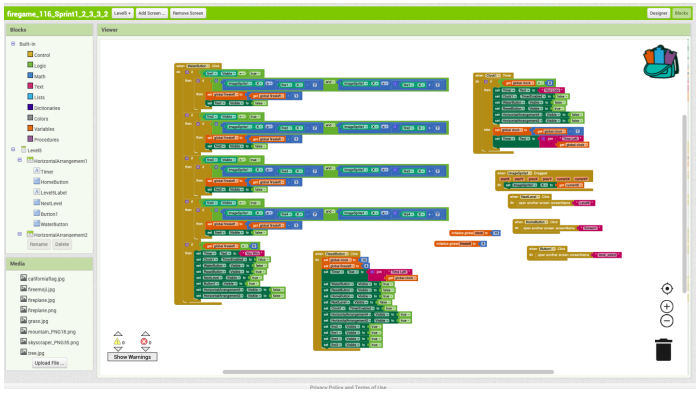
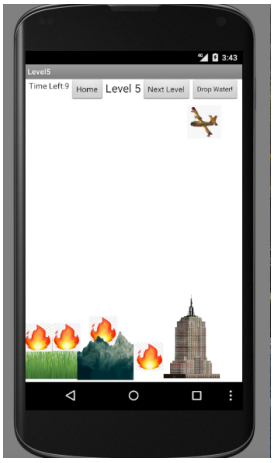

Time Left:27
Home
Level 3
Drop Water!

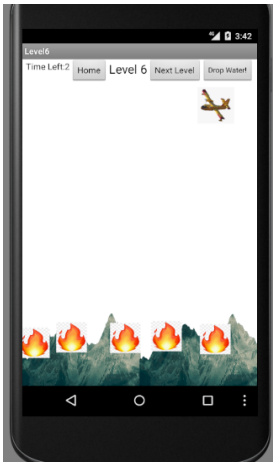

Time Left:10
Home
Level 4
Drop Water!


firegame_116_Sprint1_2_3_3_2
Time Left:
Home
Level 5
Next Level
Drop Water!


Time left:
Home
Level 6
Next Level
Drop Water!


firegame_116_Sprint1_2_3_3_2

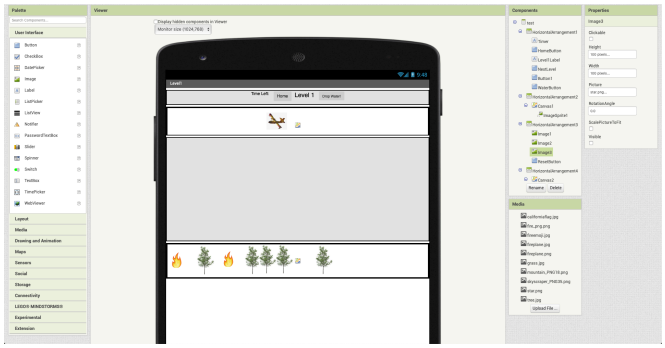


10/27: Today I worked on the retrospective and reflected on the process between me and Rohan. I also added the sprint file for Sprint 1.

10/30: Today I worked on the retrospective process of working together for sprint 1, as well as the reflection for sprint 1.

10/31: Today I worked on the 3rd Sprint and added the star system to the project. The star system is when after they finish the level, stars appear and tell them how well they did. Incorporating it into the code required 3 images to be invisible at first, but after they clicked out all the fires, I would get the time left and determine how many images to make visible. If their time already ran out, I wouldn't put any stars because they had already lost. I also combined two levels into one to save screens because we were running out of space on the Inventor.

11/1: I started working on the story mode for our game, as well as helped make the format for our app better. Our app took too many screens and was very laggy and slow. We fixed this problem by putting two levels on each screen so we could have a much more efficient app and fast app.



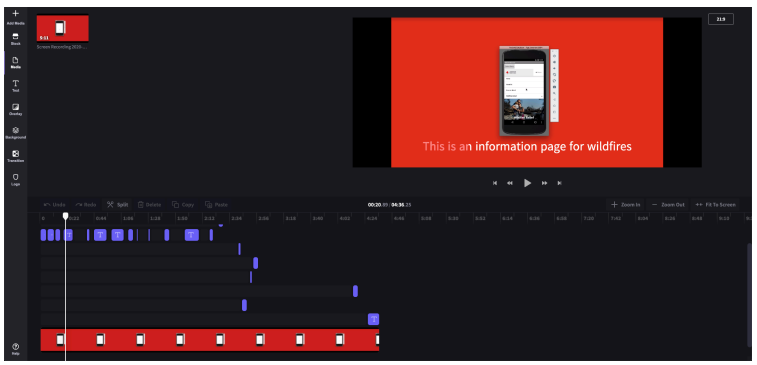

11/8: Today I worked on the last Sprint of this project. I added two more levels to the project and made them harder, and more difficult. There was an issue when making these two levels because the designer window was off and I had to spend some time fixing it. Some of the buttons wouldn't show after the game was open and the

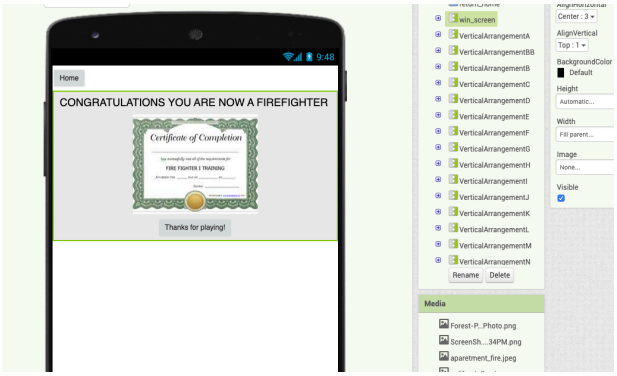
11/9: I worked on the optional story mode for users. This will include lots of different pathways a user could potentially take, as well as different interactive games. I also added backgrounds to all of the levels to make them more interesting.

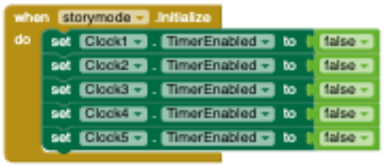
user couldn't move on. Also, some of the stars weren't showing up and the problem was that I was setting the visibility to the wrong image number.

11/11: Today I worked on making the video for the demonstration. When screen recording the emulator, I ran into some issues because in the middle of my demonstration, the emulator would crash and I would need to restart the recording and re emulate. After some time, I managed to go through a demonstration and uploaded my video into Clip Champ. There, I added subtitles to help explain my app and help the viewer understand our app better. Exporting the video took a long time for me and I used that time to upload the AIA and APK files onto the document.

11/11: I finished up the story mode, which includes lots of different pathways the user can take so the game doesn't get boring. As well as parts where the user can play levels to add an interactive part to the story mode. If they complete the level they continue with the story mode.







11/12: Today I worked on the documentation for the majority of the class. I added in the video I created and also the final APK, AIA, and QR code into the document. I also did our self evaluation and gave us a score of 16. In addition, I also finished the conclusion questions and wrote about the final product and justification sections.

Today I worked on finishing the final parts of the documentation for our project. I completed all of the Program code, which includes all of the basic functions for our app and explanations of what each one's purpose is in the app. I also completed all of my reflection including the conclusion questions and the essential questions.

Alexander's Reflection:

1. For this project, I designed the levels of the game, programmed them, and also made the video demonstration. The design of the game had a draggable plane at the top, along with a drop water and home buttons. When the plane is over the fire, I programmed the fire to not become visible if the user clicks the drop water button. If not close enough, the fire will remain visible. There was also a timer at the top, which added pressure to the game and I programmed it to make the game stop and show a "You Lose" symbol if not all the fires are put out. I also added a star system, which displays stars based on the amount of time left when all the fires are put out. The video demonstration showed how our app works only with text on the bottom to further explain all the three parts of our app. I used Clip Champ to add the text on the bottom and uploaded it to Google Drive to generate a shareable link.
2.
   a. The purpose of our program was to bring awareness to the wildfires plaguing California and help display the severity of wildfires. Since we live in California, we feel the effects of the wildfires and see people who are hurt.
   b. Our program integrates mathematical or logical concepts because in order for the fire to be put out, the x-coordinate of the plane must be +- 7 of the fire's x-coordinate. In addition, we also incorporated a greater than or equal to and less than or equal operator to determine how many stars are displayed after all the fires are put out.
   c. The algorithm of the timer counts down the time by getting the previous time stored in a global variable and subtracts one from it. It also stores that value into the global variable and joins it with the text "Time Left:" to display the time left.
   d. On the story mode, we decided to put all the questions and levels on the same screen. This allowed us to give the user a quicker experience because the app wouldn't have to constantly switch between screens. To do this, we put all the horizontal arrangements in the same spot and just changed the visibility at the appropriate time. It kept the program simple and reduced the number of screens that we had in total.

Final Product & Justifications

The hot topic news item that our product incorporates is the devastating wildfires that have been plaguing California. We both decided to choose this hot topic because we believed that it was a problem that it hurt lots of people and their loved ones and wanted to make more people aware about it. In addition, spreading awareness about events that are not only happening in California, but other places around the world as well. We also intended to help spread awareness towards the first responders, who are working tirelessly to help keep our community safe from these fires.

Video Demonstration

Final AIA File

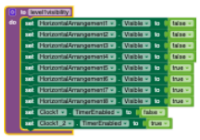
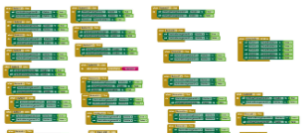
Final APK File

Works best on Mac Emulator

Our app has a game, an information section, and a story mode option. For the game, the user has to put out a number of fires before a certain time limit to go onto the next level. The information section links to a Red Cross Wildfire prevention site, where users can learn more about how to help and stop the wildfires. The story mode option is when users go through a series of tests and mini games to see if they can become a firefighter. The game is designed to show the difficulty of putting out fires and the hard work first responders go through to keep the community safe. The information section's purpose is to give the users a resource to donate and help the first responders. We put a story mode option because we wanted to know what it was like to be a firefighter and the some traits they all

possess. The best place for our app to work would be on a Mac emulator because that was what both of us programmed and designed on.

Program Code

Screen Captures	Comments
	These are the Screen 1 functions, it is the control screen and here users are able to decide which screen they want to go to, whether that's the story mode, levels, or learn more pages.
	Here is the base code for the level, the code would see if the plane the user is controlling is within a certain area of the fire, if that's true, the fire will be extinguished. Once all the fires are extinguished, the user will have beat the level. There is also a star system that based on how much time is left when the user beats the level, that will correspond to how many stars the users will get.
	This is the level visibility set up. Since we put 2 levels on one screen, we can't have both showing at one time. Once the user completes the level before, the visibility setup will set all the horizontal arrangements that affected the level before to set the visibility to false. While also setting all the next levels horizontal arrangements visibility to be true. It will also set the clock to start running.
	All of the blocks for this part of the story mode are minimized because they take up a lot of space. Since there are 5 different tests there are 5 rows. The first column is the basic fire functions
	column. The second column controls the clocks for the tests, the third controls what happens when the home button is clicked, the fourth and fifth are for the global variables, and the sixth is for moving around the plane.
	This is all the visibility for the story mode, since it's all on one screen, your decisions don't actually take you to another screen, just set another decision's visibility to true. This would control where you go after you make a decision for example, if you were in vertical arrangement A, and you chose option B, the program would set vertical arrangement visibility to false, and

	The clock will put pressure on the user while they are trying to complete the level, the clock will countdown starting from the time allowed for that level. Once the clock hits zero, the user will lose and won't be able to move the plane or extinguish the fires anymore.
	The reset button will become visible after the user has either beaten the level, or failed it, if they beat it they also have the option to move on to the next level. Once the user clicks the reset button all the global variables will be reset, this includes the "firesleft", and the "clock" variables. This will also set all the fires visibility to true as well as all other functions of the level.
	The global variables vary based on the level, as the levels get harder, the firesleft will increase and the clock will decrease. The other function controls the plane the user can move back and forth, the user can only control the x coordinate of the plane, so the plane can only go back and forth on the x-axis.

Rohan's Reflection:

1. During this project, I designed some of the levels for the game, made the whole story mode for our game, and made a learn more page. We had a total of 8 levels for our game and I designed and helped with 2 of them. We also thought it would be a good idea to include a learn more page where users can learn how to help spread awareness for the wildfires that are taking over California. Since our game is about wildfire prevention, I made our story mode centered around training to become a firefighter. The user will start with one question then slowly it will branch out into a lot of different pathways. Then, if the user successfully completes the story mode they win. Each decision is multiple choice and includes a picture and prompt.
2.
    a. The purpose of our program was to help spread awareness to the wildfires currently affecting lots of people, not just in Californias but also other places. Wildfires are a severe thing and should not be take lightly.
    b. The program integrates math and logical concepts due to the logic required that tells the program whether or not to set the fire visibility to false. If the plane is within a certain parameter of the fire the fire will be extinguished, if not then the fire remains burning.
    c. The timer algorithm counts down from a certain number putting pressure on the user to put out all of the fires, the program subtracts one from the timer every second and once the timer hits 0 the user loses and has to retry the level.
    d. Since we had to put 2 levels on each screen we added a visibility set up using a procedure. The procedure will set all the level one components to invisibile while all the level two components will become visible. This helps us keep the program simple and not have a super complex program.