EPICS
WFYI
Maeve McCormack and Patrick Bagnuolo
Spring 2020
Eva Kor Virtual Garden

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Summary/Abstract

WFYI, Indianapolis' PBS and NPR affiliation, needed help with one project in the domain of computer science. They needed a website with an interactive garden that users could plant a flower with a message attached. This message could be anything, but mainly the messages would come as response to watching a documentary about Eva Kor a holocaust survivor.

According to WFYI, Eva: A-7063 is the story of Eva Mozes Kor. At age 10, Eva survived experiments by Nazi doctor Josef Mengele. At 50, she helped launch the biggest manhunt in history. After decades of pain and anger, Eva traveled the world promoting what her life journey has taught: Peace. Humanity. Forgiveness.

Chapter 1: Introduction

Our clients:

Our client, WFYI, is located in downtown Indianapolis, about 15 minutes away from Butler University's campus. WFYI is a nonprofit organization providing trusted news and quality entertainment for 50 years – educating and engaging the community. WFYI's mission statement is, "WFYI Public Media empowers, educates, entertains and connects our community through impactful journalism, inspiring stories and lifelong learning". One of WFYI insprising stories includes a documentary produced by Ted Green about a holocaust survor named Eva Kor.

At age 10 Eva Kor was experimented on by a Nazi Doctor, Josef Mengele. Josef Mengele was known for experiments with twins throughout the the Holocaust. At 50, Eva helped launch the biggest manhunt in history to find the doctor that caused her and her sister and many other people so much pain and suffering. Into her 80s, after decades of pain and anger, she began to promote a new journey. The journey to forgive to heal. Her life journey taught many people: hope, healing, and humanity. "Eva: A-7063," a documentary by Ted Green, Mika Brown, and WFYI, tells her full, unvarnished story for the first time, inspiring viewers around the world.

Our Team:

This project was started last semester at Butler. This semester this project was taken on by a small but mighty team of two people. Our team includes:

- Maeve McCormack -- Team leader, Website Manager, UI/ frontend developer
- Patrick Bagnuolo -- Lead Software Engineer, Database Manager, Firebase specialist

Eva Kor Virtual Garden:

WFYI asked us to continue working with the virtual garden where people can input their own thoughts and messages in relation to Eva Kor and her story. The frontend of the garden was mostly completed in terms of basic functionality. This semester the biggest focus for our team was to provide a working connection between the frontend and backend part of the project. Our team focused on providing a database for the flowers that are being inputted into the virtual garden. The main requirements for this semesters included:

1. Establishing a working cloud database using Firebase
2. A working virtual garden that people are able to access and look back and see their messages they left on the website
3. Improving visual appeal and convenient functionality on the front end

Chapter 2: Requirements Specification

Overall Requirements:

1. Creating a database
2. Connecting frontend to the backend
3. Meeting with WFYI to improve visual appeal
4. Search functionality for each flower in the database

Sprint Goals:

Each sprint we focused on the overall requirements in more specific developments. Included in this section are all the goals we had for each Sprint period. Our team was able to create a very manageable set of goals for each Sprint. Since our team only consisted of two members, we need to accurately assume how much we were able to accomplish in the time period given.

- ➢ Sprint 1:
  - Meet with client at WFYI
  - Make a Trello Board
  - Design Epics Website
  - Introduction, team members, pictures, etc.
  - Gather all information from past semester
  - Github
  - Establish a plan for Database management
  - Move code to GitHub for increased productivity and ease of updating the code base
- ➢ Sprint 2:
  - Setting up a Firebase database
  - Connecting the Database to the Front end
  - Be able to pull data from the database to the front end
  - Creating multiple color options for Flowers to submit
- ➢ Sprint 3:
  - Meet with Client
  - Connecting the database to the individual flowers
  - Creating different color options for the flowers
  - Developing a search function
  - Transition to Online Classes
- ➢ Sprint 4:
  - Research Profitaty filter options
  - Enhance search function
  - Fix minor UI preferences

- Correct Quote image
- Change location of Find flower Button

Chapter 3: Artitecture

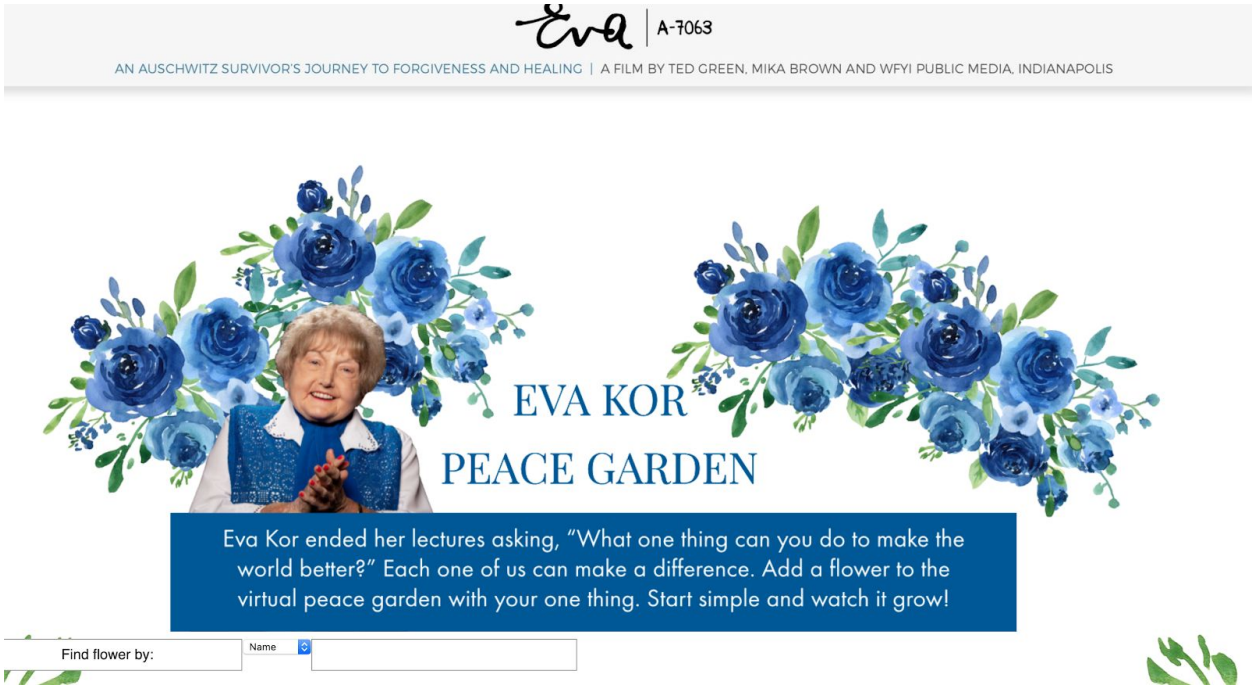
The overall architecture of the project is fairly straightforward. For the website end we used basic HTML, CSS, and JavaScript to create and format the page as we liked it. The form that appears on screen when clicking to create a new flower is done purely in HTML and CSS. The website currently is up on Github for easy network access to the current form of the webpage.

In terms of the back end database portion of the webpage, we use a cloud based database called Firebase. A product of Firebase is the Cloud Firestone feature. Cloud Firestore is a NoSQL document database that lets you easily store, sync, and query data for your mobile and web apps - at global scale. The database is a product of google services and provides multiple tutorials and videos on how to get the most out of the products we were using. The database is now connected to the frontend of the database with JavaScript coding.

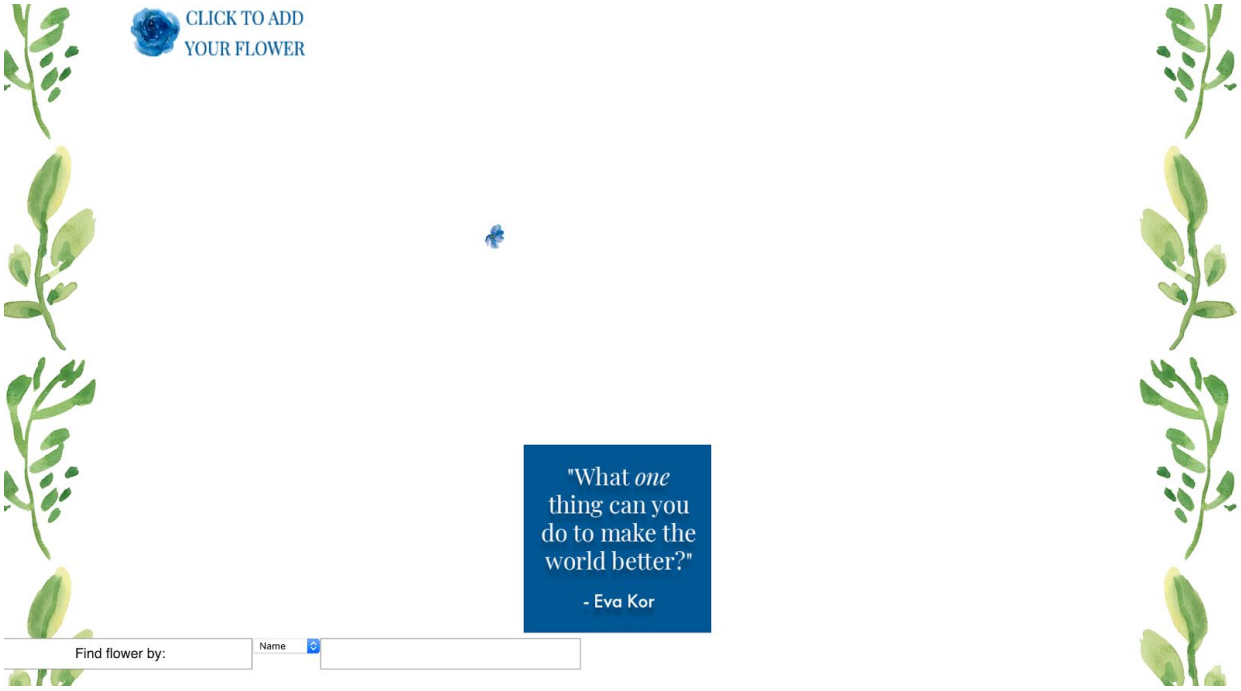
Chapter 4: Design

The design of the user interface has remained similar in relation to the semester's previous work since our main focus was getting the backend database to work properly. We improve a couple things within the user interface to account for search functionality, different flower color options for the user, and display of the flowers information

Final Demo UI:

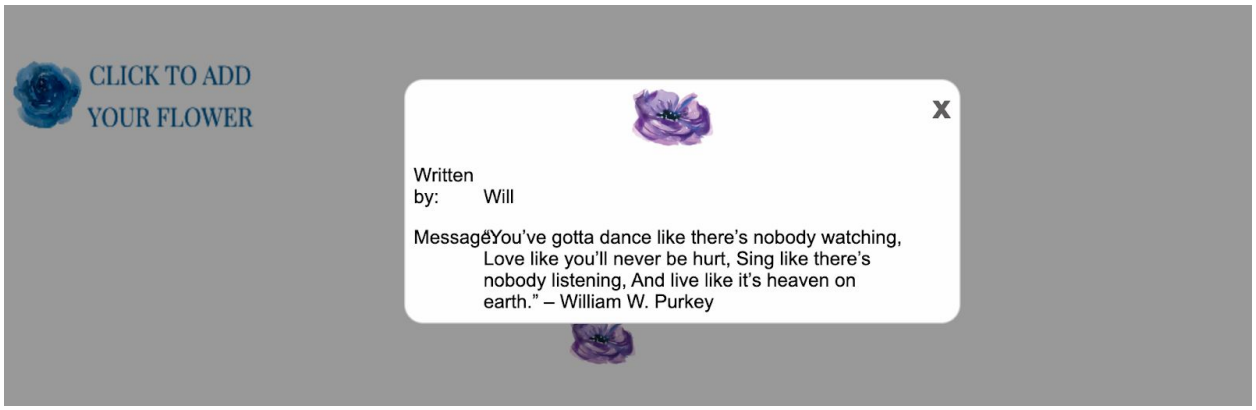


This image is the header for our website and it includes two images provided by WFYI. The top is about the documentary about Eva's life and the bottom is a quote by Eva along with a picture of her. You can see at the bottom of the screen print is the search bar for a flower which is in a fixed position when you continue to scroll through the webpage.



This is the canvas for the virtual garden. This is where all the flowers will be displayed once a user submits them to the database. The flowers are generated randomly around the quote in the middle of the webpage.

This is the current display of the form that the user must submit for the flower they would like to input into the database. The user can now select from three different color options for their individual message.



When you search a flower by an attribute like the name Will for example, a pop up window will show all the flower's features that are in the database. This includes who it's written by, the message, and the color of the flower.

Overall Color Scheme and design images:

The current color scheme is determined by Eva Kor's favorite colors. Everyone that knew her well knew that her favorite color was blue and our team did our best to make sure her favorite color was shown well in the webpage. The additional images that were selected for the web page were provided to us by Jessica Chapman, a member of the WFYI Eva Kor organization.

Chapter 5: Implementation

From the beginning of the semester our team knew that the main goal that was needing to be implemented was the database for the user input. We started our journey into the research of which database software would be best for the project. Patrick was more experienced in the use of databases, therefore, that was his main focus for the semester. The team researched multiple different softwares that were cloud based instead of a local database. There were multiple different cloud databases that we looked into including Microsoft Azure, AWS Amazon, and Google Firebase. The first couple days were focused on finding the best cloud database system for us. We decided to use Google Firebase because it seemed like the most simple and effective database to use for our system.

There was also a moment in the beginning of the semester that we considered a different approach for the user interface and the entirety of the virtual garden. Patrick did research on some 3 dimensional options for flowers and gardens and presented it to the clients. The team was then faced with a decision to either continue to work on the 2D version of the garden or try to complete a 3D version. After communicating with the clients at WFYI, it was important that we were able to provide a final working version of the garden by the end of the semester because WFYI was going to lose ownership of the project in May. The team decided to continue with the 2D version since we both were not familiar with the 3D aspects and were afraid that we would not be able to finish it all in one semester if we switched. Looking back at it now, this seemed to be the right decision to stay with the 2D version.

After we made the decision to stay with the 2D version, we started to brainstorm how to improve the overall functionality and visual appeal of the webpage. The first couple sprints consisted mainly of getting the database set up and connected to the user interface. Since we both have never used Firebase before this required a lot of attention, video tutorials, and trial and error.

After we were able to get the database set up and connected, we started focusing on the UI and the search functionality. We asked our clients at WFYI if there were any other visual appeals they would like to change to the current version. They informed us that the overall UI was good as it was with some minor changes to scaling issues and the additional color options for selecting a flower.

Towards the end of the semester we were unsure how to implement a working profanity filter for the flower messages in time. The team researched different ideas but realized that our knowledge was limited on what options to take. With the Firebase database, the administrator has access to change and edit any messages in the databases. This is the start of a filter option for administrative access. It is also easy to remove flowers from the database as well. Currently we

thought with the time we had it was best to research the options and provide it to the clients instead of rushing to try to develop a profanity filter ourselves.

Chapter 6: Quality Assurance and Testing

The majority of our quality assurance testing was done through personal use and trying to test which inputs would be included in the virtual garden. For example, when the multiple color selections for the flowers were implemented, we tested to see if you didn't select a flower color, if it would appear in the garden. It turns out even if it is included in the database it does not show up on the virtual garden unless a color is selected. Majority of the testing was done with the database and the front end of the webpage form being used.

We also realized there were some issues with scaling with the original version of the webpage. The common issue when using HTML and CSS is that websites do not scale properly when the window size is shrunk down. We made sure to test if all the scaling would be correct no matter what version of the web size was used.

Chapter 7: Project Organization and Management

Our team consisted of only two members: Maeve McCormack and Patrick Bagnuolo. In the beginning, there were definitely some thoughts if the team was going to be too small to get a lot done on the project. However, that thought was proven wrong right away. It was simple to divide up the work between two people by having two categories: frontend/UI and backend/database. With this approach the overall goals were easy to manage for each sprint.

Patrick Bagnuolo was the main software engineer and database manager for the project. His knowledge on databases and javascript was essential for the success of the team. Patrick took control of the Firebase database and connected the frontend to the backend. He was in charge of the research for the Firebase and had to deal with learning something he has never used before. He managed all the work going into the database and the searching functions for the web page. He was also very helpful throughout the semester with the remaining team in terms of establishing Github for the team and helping solve problems with the UI.

Maeve McCormack was the team leader and website manager. Her ability to stay nicely organized and focus on the goals at hand help the team remain on target for their goals. Maeve was in charge of the frontend/UI ideas and visual appeal. Maeve was also the main communicator betweens the client and the team. Since there were limited things to be done on the frontend part of the project towards the end, she was also incharge of managing the final report and final poster. It was also Maeve's responsibility to complete the weekly status reports every week and upload the deliverables on the EPICS website.

Chapter 8: Future

Unfortunately, since WFYI is losing ownership of this project it is difficult to say if this project will have the opportunity to come back to Butler next semester. However, if there was an opportunity that the project would still be able to come back and continue to have work done to it then we would have a couple suggestions.

Depending on how much time the team would be able to work on th3e project, it would be interesting to come back to the option/idea to create a 3D version of the virtual garden. The clients seem to be really excited and much more impressed with the ability to have a more up to date technology for the users to enjoy. We looked into some platforms to use and they all seem very exciting and futuristic, which would go well with the VR tours that WFYI has been giving to schools. One of the options we looked at was three.js which is a cross-browser JavaScript library and application programming interface used to create and display animated 3D computer graphics in a web browser.

Another future requirement would be to implement a profanity filter for the input messages. Since Eva's story is very inspiring and a sensitive story, we would hate to have inappropriate messages being displayed in the virtual garden. There are multiple different options to use like an automatic AI system to filter out the negative messages.

References

1. https://www.wfyi.org/
2. https://www.thestoryofeva.com/
3. https://www.amazon.com/Eva-7063-TedGreen/dp/B07YTLY81L/ref=sr_1_1?crid=1BI2A3LGJX0R2&keywords=eva+a7063&qid=1571076165&sprefix=eva+a-%2Caps%2C165&sr=8-1

Appendices:

Weekly status Reports:

WEEKLY STATUS REPORT (WSR)
February 10, 2020

TO: Patrick Bagnuolo,
Professor Linos
FROM: Maeve McCormack
SUBJECT: Status report for week 2/3/2020-2/10/2020

I. RED FLAGS: none

II. ISSUES: trying to decided whether to continue with the past project or start over with 3D modeling

III. ACCOMPLISHMENTS (dates):

2/5/2020

- Met with WFYI client and discussed the idea of 3D modeling for the garden
- Expressed concerned on not being able to finish in time
- Stated that either option they will like but are more excited about 3D but again want it to be finished

IV. ACTION ITEMS FOR FOLLOWING WEEK (dates):

- Start setting up database
- Decide on 3D or 2D model

WEEKLY STATUS REPORT (WSR)
February 17, 2020

TO: Patrick Bagnuolo,
Professor Linos
FROM: Maeve McCormack
SUBJECT: Status report for week 2/10/2020-2/17/2020

V. RED FLAGS: none

VI. ISSUES: none

VII. ACCOMPLISHMENTS (dates):

2/10/2020

- Decided to continue to use the current prototype instead of moving to a 3D version of the garden

2/12/2020

- Set up a Firebase database for the garden and flowers

VIII. ACTION ITEMS FOR FOLLOWING WEEK (dates):

- Connect the database to the current HTML (2/19)
- Get correct images from Jessica (2/17)
- Create three color options for the flowers (2/19)

WEEKLY STATUS REPORT (WSR)
February 24, 2020

TO: Patrick Bagnuolo,
Professor Linos
FROM: Maeve McCormack
SUBJECT: Status report for week 2/17/2020-2/24/2020

IX. RED FLAGS: none

X. ISSUES: none

XI. ACCOMPLISHMENTS (dates):

2/19/2020

- Connecting the firebase database to the front end

2/20/2020

- Created three color options for flowers to be selected

XII. ACTION ITEMS FOR FOLLOWING WEEK (dates):

- Get the function for the three color options to run when the radio button is selected (2/26)
- Figuring out how to save the current flower in the database (2/26)

WEEKLY STATUS REPORT (WSR)
March 2, 2020

TO: Patrick Bagnuolo,
Professor Linos
FROM: Maeve McCormack
SUBJECT: Status report for week 2/24/2020-3/2/2020

XIII. RED FLAGS: none

XIV. ISSUES: none

XV. ACCOMPLISHMENTS (dates):

2/25/2020

- the flowers are now able to load onto the page with a unique identifier

2/24/2020

- Created three color options for flowers to be selected I n radio button

XVI. ACTION ITEMS FOR FOLLOWING WEEK (dates):

- Meeting with clients(3/5)
- Using the database to pull the color option attribute and run a function with the correct flower image related to the color attribute (3/10)

WEEKLY STATUS REPORT (WSR)
March 9, 2020

TO: Patrick Bagnuolo,
Professor Linos
FROM: Maeve McCormack
SUBJECT: Status report for week 3/2/2020-3/9/2020

XVII. RED FLAGS: none

XVIII. ISSUES: none

XIX. ACCOMPLISHMENTS (dates):

- Met with client at WFYI (3/5)
  - Discussed our progress on the database
  - Discussed possible UI changes and improvements
  - Overall very pleased with the progress the team is making

XX. ACTION ITEMS FOR FOLLOWING WEEK (dates):

- Spring break therefore no scheduled meetings (3/9-3/18)

WEEKLY STATUS REPORT (WSR)
March 30, 2020

TO: Patrick Bagnuolo,
Professor Linos
FROM: Maeve McCormack
SUBJECT: Status report for week 3/9/2020-3/30/2020

XXI. RED FLAGS: none

XXII. ISSUES: none

- Transition to online classes

XXIII. ACCOMPLISHMENTS (dates):

- Contact WFYI team to give an update on the online learning (3/23)
- Online Zoom Meetings
- Transitional period

XXIV. ACTION ITEMS FOR FOLLOWING WEEK (dates):

- Come up with manageable sprint goals for the rest of the semester with transition to online learning and online meetings

WEEKLY STATUS REPORT (WSR)
April 6, 2020

TO: Patrick Bagnuolo,
Professor Linos
FROM: Maeve McCormack
SUBJECT: Status report for week 3/30/2020-4/6/2020

XXV. RED FLAGS: none

XXVI. ISSUES: none

XXVII. ACCOMPLISHMENTS (dates):

- Complete Online Sprint presentation (3/30)
- Create new goals for the next sprint (4/1)
- Update WSR and create template for final poster (4/6)

XXVIII. ACTION ITEMS FOR FOLLOWING WEEK (dates):

- Sprint 4 presentation (4/15)

WEEKLY STATUS REPORT (WSR)
April 13, 2020

TO: Patrick Bagnuolo,
Professor Linos
FROM: Maeve McCormack
SUBJECT: Status report for week 4/6/2020-4/13/2020

XXIX. RED FLAGS: none

XXX. ISSUES: none

XXXI. ACCOMPLISHMENTS (dates):

- Research profanity filter
- Continue to improve the search function
- Enhance visual appeal

XXXII. ACTION ITEMS FOR FOLLOWING WEEK (dates):

- Sprint 4 (4/15)

WEEKLY STATUS REPORT (WSR)
April 20, 2020

TO: Patrick Bagnuolo,
Professor Linos
FROM: Maeve McCormack
SUBJECT: Status report for week 4/13/2020-4/20/2020

XXXIII. RED FLAGS: none

XXXIV. ISSUES: none

XXXV. ACCOMPLISHMENTS (dates):

- completed sprint 4 presentation (4/15)
- completed search function (4/13)
- made flower display bigger (4/13)
- moved the search function to the bottom of the page (4/13)
- changed the center image to a corrected version (4/13)
- emailed Jessica and Chris final presentation link (4/13)

XXXVI. ACTION ITEMS FOR FOLLOWING WEEK (dates):

- Final presentation (4/30)
- Final poster (4/30)
- Final Report (4/30)
- Improve search function (4/22)
- Change the display of flower information

WEEKLY STATUS REPORT (WSR)
April 27, 2020

TO: Patrick Bagnuolo,
Professor Linos
FROM: Maeve McCormack
SUBJECT: Status report for week 4/20/2020-4/27/2020

XXXVII. RED FLAGS: none

XXXVIII. ISSUES: none

XXXIX. ACCOMPLISHMENTS (dates):

- Improved search function (4/22)
- Changed the location of search bar to a fixed location (4/25)
- Improved scaling issues (4/25)

XL. ACTION ITEMS FOR FOLLOWING WEEK (dates):

- Final presentation (4/30)
- Final poster (4/30)
- Final Report 4/30)
- Change the display of flower information (4/29)

Presentation Slides:

Slides can be found on the EPICS website.