

The ONE Homepage:

A Personal, Customizable Desktop Webpage

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ABSTRACT

The Internet is a vast, global portal into a world of virtual social interactions and countless hours of entertainment. We spend hours upon hours on the Internet either utilizing this resource for school and/or work purposes, or simply to get away from it all and spend some time catching up on the latest world news or seeing what friends and family members are up to on social media. The Internet was initially created to distribute practical information, such as important documents or breaking news stories, between distant users. Today, the Internet is a completely different place than it was at its inception back in the late 1900s. Social media and virtual social interactions dominate not only the Internet, but the entire world when it comes to new media. Everyone nowadays has to be connected with one another using social media websites and share every moment of their lives with all of their online connections. The problem is there are a dozen social media websites the average millennial uses on a daily basis, which can be somewhat of an overwhelming task to check on every single website periodically to be updated on what's going on in their circle of connections. That is where the ONE Homepage concept comes into play. The ONE Homepage is a personal, customizable web page where a user can customize and access their regular resources such as their most frequently used social media feeds and local news/weather information all in one, convenient location. Users are able to be informed and entertained without the need to open multiple tabs on their preferred web browser. This proposal aims to fix the clutter and inconvenience of having multiple tabs open on a single web browser just to check on each social media website. The ONE Homepage is designed to be that solution; its goal is to be the front page of every user's Internet browser.

Keywords

customizable, desktop, homepage, media, new media, news, personal, social media, webpage

1. INTRODUCTION

The ONE homepage is first and foremost designed with the user's interests in mind. Whatever the user is interested in, it will be displayed right on the ONE Homepage. Our end goal is to provide users with a personal, unique, customizable homepage that they can call their own. It is designed as a web page where users can access all of the information they use on a daily basis such as social media feeds, local news, weather, etc. all in one convenient location without the need to open multiple tabs on a web browser. The ONE Homepage is designed as a single web page where all of the content being displayed remains on that same web page

without the need to open additional windows and/or tabs for two main reasons: convenience and performance.

Convenience is pretty self-explanatory. As mentioned before, our team's goal is to provide users with an all-in-one web page where every website they regularly visit can be viewed in one, single webpage in a clean and structured format. Performance, on the other hand, is a bit more abstract. Performance involves the actual performance of the users' machines. Surprisingly, having too many tabs open at once in a web browser uses a considerably high amount of CPU power and computer memory. Simply put, the more tabs and windows that are open in a web browser, the higher the probability that the users' machine will begin to slow down. The ONE Homepage tries to fix this problem by avoiding multiple tabs altogether in favor of one convenient and efficient web page where the users' computer resources are not affected at all.

Over the development process, the ONE Homepage has been through countless concepts and iterations regarding its overall design. As of now, our team has narrowed down the website's design into three main concepts, described more in detail in Section 3 of this paper. The basic design idea for all three concepts falls under the same description: The screen will be divided into various sections, allocating sections for each web applet (media feeds) in an order and format chosen by the user. The basic design will include getting a fixed number of web applets for the user to choose from with a more simple UX design and limited customizations. If time allows, an advanced design with more API's will be added to choose from and more complex features such as calendars or chatbots will be included.

2. GOALS

The main goal for our team is to create a homepage for users to view a brief synopsis of their favorite social media, as well as current news stories and local events. As mentioned in the Abstract, we want users to avoid having to open multiple tabs in order to view all of their preferred social media websites. Of course, this webpage won't directly replace the full-page social media and news websites, but it will definitely reduce the number of tabs the user will have open at any one time. The main purpose of this website is to provide a simple, digestible, surface-level view of several media in one place for casual viewing, a "dashboard" uniquely tailored to each individual user.

3. INITIAL DESIGN CONCEPTS

For the design of the ONE Homepage, three individual concepts were designed and evaluated. This section will mainly discuss the strengths and weaknesses of the different concepts proposed by our team during the initial stages of development.

3.1 Multiple Widgets

The idea of using multiple widgets was to give the user as much flexibility as possible. The user would be able to organize the widgets on the page and add and remove them to their liking. The user would also be able to adjust the sizing of individual widgets based on their preferences (as shown in Figure 1). In addition, the concept of having multiple widgets on the same page was to give the user the ability to view all their social media content at the same time. However, there were some flaws to this design concept. Having too many widgets on the same page can begin to become overwhelming for the user. The purpose of this project is to design a page that provides a collective representation of a user's social media content without giving off an overwhelming, uncomfortable, and/or unpleasant experience. Additionally, because of the use of widgets, developing such a page would require extra consideration of its use of RAM and network traffic making it not suitable for low-end PCs.

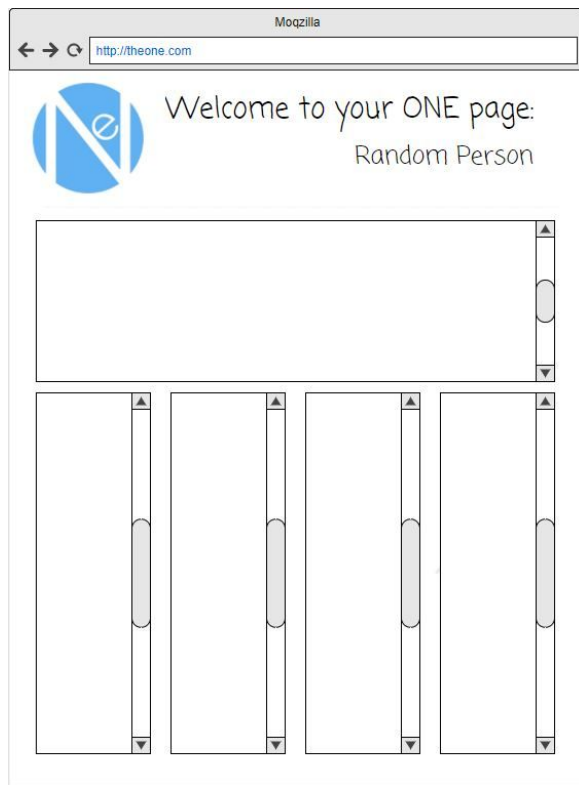


Figure 1. Multiple media feeds on the web page can be fully moved and resized by the user

3.2 Cohesive Page with Filters

The idea behind designing a webpage with filters came with both strengths and weaknesses. When it came to deciding on this concept, the user experience was to have a cohesive page that conglomerated all the user's social media outlets that the user wanted to view. With a single tab, the user would be able to view all their social feeds on one page (as shown in Figure 2). Additional filters are then included for each individual media that the user can filter into and immerse themselves on the selected media. With these features, the user would be able to control how

much media intake they wanted. However, using filters was an issue because it does not fit well in terms of the purpose of this project. The use of filters would represent the same thing as if the user was using Google Chrome or Firefox (to name a few) and had multiple tabs opened loaded up with all their social media sites. This was the main drawback with a cohesive web page concept which lead to the following alternate design.

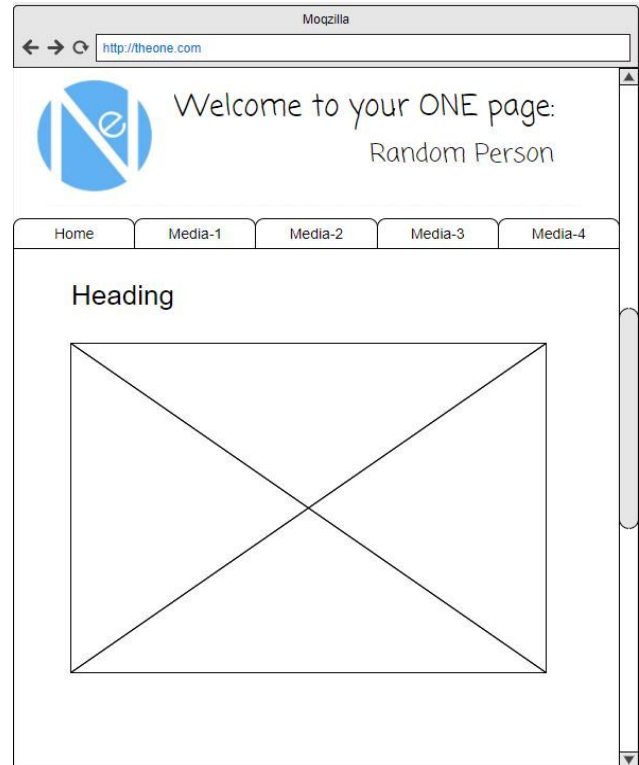


Figure 2. Multiple media feeds are organized by tabs inside the web page

3.3 Single, Responsive Webpage

After looking into two different design concepts, the team built upon the strengths of the two to create a final third concept: a single, responsive web page that provides a combination of both the user's social media along with helpful widgets to provide external resources for the user (as shown in Figure 3). This design not only provides the user with customizability (social media content, weather, search, external links, assistant, etc) but also a cohesive representation of everything in an evenly distributed layout which the user also has the option to configure. The entire web page is split into four main sections: the header, the left side, the right side and the footer. The header contains the name of the web page (the ONEpage) as well as a unique greeting to the user depending on the time of day (Good Morning, Good Evening, Good Night). To the left of the footer, the clock and date is displayed. The clock information is fetched from the user's local machine. To the right, a small weather widget is displayed according to the user's current location. For more weather information, the user can simply click on the link on the widget to see a weekly forecast in a new window [3]. Under the header, the ONEpage is split into the left side and the right side. The left side consists of the user's favorite links, which he/she can customize

and reorder to their liking. A search bar at the bottom of the links is also provided and can be mapped to any service that offers web search capabilities (the default being Google). To the right, the ONEpage consists of three main feeds, which can also be customized by the user. Currently, only the Facebook and Twitter APIs allow for embed feeds. The user can search for their favorite Facebook Page or Twitter User and display that specific account on one of the three feeds. The last section of the ONEpage is the footer, which contains a marquee of the current stock market [1]. With this design, the one issue is that space may be limited due to the compactness of the web page, however, during the development and testing phases of this project, changes can be made to adjust for this drawback.

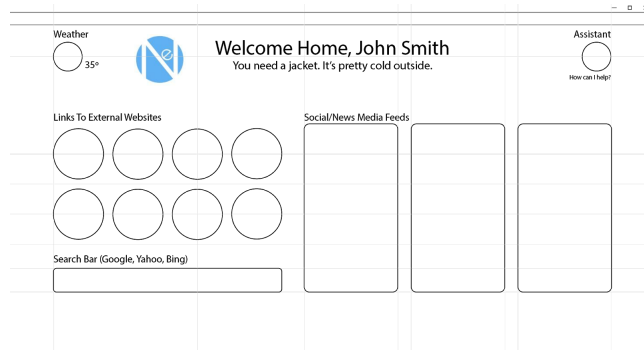


Figure 3. A combination of design's one and two; a single, responsive webpage (low fidelity concept)

4. ISSUES

There are three main issues when creating a new interactive medium, such as the ONEpage, which we will address below.

4.1 Media Issues

Several issues that may appear during the design and implementation of this projects. From a media perspective users may want to adjust the viewing size of each source of social media content that is displayed on their homepage. This will include being able to dictate which site they will see and the size that each site takes up on the screen. This stems from the issue of how much information is too much to a viewer. There will be a limit to how much information a user can process without feeling overwhelmed and not using the application.

4.2 Cognitive Issues

There are a few cognitive issues that may present themselves during the development of our application. One of these is that having many different cognitive feeds on one screen at the same time may be distracting to users. During the information age that we live in there is so much content that is being created on a daily basis that is difficult to take it all in. This content however comes from a variety of sources which forces the user to go to many different applications to view all of the content. By aggregating all of these feeds into a central location users no longer have to go out of their way to see all of this data potentially distracting users even more then the current way social media is consumed. Additionally, presenting lots of information to a user will be difficult to keep clean and may lead to clutter.

4.3 Social Issues

Negative or explicit content is a social issue that may present itself within our project. Many social media platforms allow for explicit content to be seen by viewers e.g. Twitter and Reddit. However, on websites the user must first acknowledge that they want to see this type of content. Luckily, with the Facebook and Twitter API's, explicit and not safe for work content can be filtered and blocked based on the user's preferences, so these issues are somewhat resolved only if the user changes these preferences manually. By aggregating many sites together we will have to define explicit content and allow the user choose and to whether or not they want to view this content. Another social problem that we may encounter is the usage of malicious links. Not all website are safe for user, unsafe links are pushed en masse on social media hoping that someone will click on them. We will have to determine what our site does to identify and tell the user that they may not want to click on a link. Or should the problem be up entirely to the user, this is again a problem that different social media sites handle differently. Through linking them all together we will have to standardize this and determine what is best for the user.

5. WORKPLAN

Our team was split into two sections, the front-end team and the back-end team. We primarily split responsibilities of major components between team members in this way to avoid major overlaps or conflicts in the code.

The front-end team, comprised of Raymond Zhu and Joseph Sutorus, mainly focused on the user interface and user experience design. They were in charge and in control of the overall look and format of the application and therefore had a large effect on the user's experience. Alongside the challenges of front-end programming, a large emphasis on human-computer interaction was an area these team members placed their focus in. They worked on the homepage using HTML, CSS, and some JavaScript.

The back-end team, comprised of Jose Andrade, Andrew Leal, and Lauren Kleckner, worked on the social media and news media feeds. The emphasis in this subgroup was to work with several social media APIs and a database in order to construct the core functioning application. In the end, we didn't work with a database and decide to use local storage to store user information and settings locally in the browser's cache [6]. Successfully combining these APIs for fluid connection to the front-end was imperative. This was done using python through the React JS framework [4]. Since the backend was a bit more work intensive, the backend team comprised of three people instead of two. The team had an end goal of developing a simple, intelligent assistant that can do simple commands such as opening a webpage or stating the current weather, but due to the constraints of time and the lack of open-source, free to use AI libraries, we ultimately decided to include this in future work (discussed in more detail in Section 9).

Even though we were split into two teams, we often moved between teams to help each other out when we were having issues with our code. To collaborate between the two teams, we utilized GitHub and created a repository for this project (<https://github.com/jmsutorus/onePage>). In the end, we all worked together as ONE team to accomplish our end goal.

6. FINAL DESIGN

After many different additions and iterations to the Onepage, the application is now finished and of the final features are successfully implemented. A screenshot of how the final application looks like is shown in Figure 4.



Figure 4. The final iteration of the OnePage

As mentioned before, the time and date module gets the current time and date where the user is located (Figure 5). This information is then displayed to the user on the top right corner of the screen so that it is easily viewable.

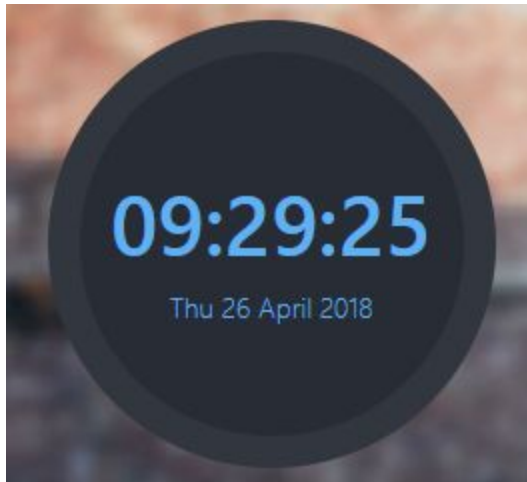


Figure 5. The clock widget of the OnePage

The weather module displays the current temperature of the user's current location (Figure 6). At the initial launch of the web application, the user will need to grant the application access to his/her current location in order to fetch the weather data. The data comes from OpenWeatherMap which is a free site the provides weather information of locations in the US. The applet displays the current location of the user, the current temperature in degrees Fahrenheit (can be changed to Celsius if preferred), the current weather conditions, the humidity level, and the wind speed. If the user doesn't want to share their current location, the location of the weather data can be manually set on the OpenWeatherMap website.



Figure 6. The weather widget of the OnePage (provided by OpenWeatherMap)

The site also provides a Google search bar that lets the user type a search and will display the results in a new tab (Figure 7). Currently, the default search engine for OnePage is Google.com, but this can be easily changed if the user prefers using another search engine. When a user enters a string in the search bar and presses enter, the string will be searched and opened in a new window.



Figure 7. Google Search Bar

Current stock prices are displayed on the bottom on the screen in a slow scroll from right to left (Figure 8). The stock prices are provided by MacroAxis.com and are updated after every refresh.

Seoul Comp 2474.11 ↑ 25.299941	Taiwan Wtd 10697.13 ↑ 117.63	SPTX Comp 15552.06 ↑ 42.31
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Figure 8. Stock Prices Marquee (provided by MicroAxis)

Links are displayed to common websites on the left side of the screen (Figure 9). These links are rounded pictures of the icon and zoom in when the user hovers over the picture. When the user clicks on the link they will be taken to that page in a new tab.

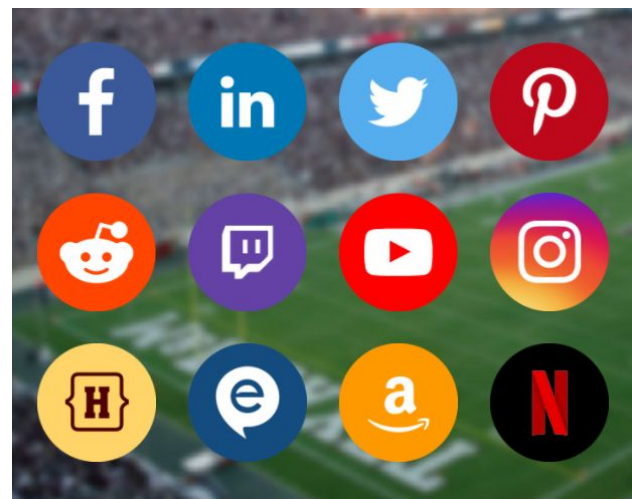


Figure 9. Custom Links

The site currently provides three social media streams for users. the first feed is from Facebook (Figure 10). At the top of the feed users can search Facebook Pages and display their favorite page right on OnePage. Unfortunately, due to the limitations of React.JS, the page must be reloaded after searching for a Facebook page and hitting enter for the results to be displayed.



Figure 10. The Facebook Feed

The other two social media stream are pulled from Twitter and also provide a search bar at the top where the user can enter the name of a Twitter user (Figure 11). Again, because of the limitations of React.JS, the same issue as before applies to the Twitter feeds as well. Everytime the user wants to search for a specific Twitter user, he/she has to press enter and manually refresh the web page. We plan to fix this bug in future iterations.



Figure 11. The Twitter Feeds

7. USER SCENARIO

John Smith is a college student that has many different social media sites such as Twitter, Facebook, and Instagram. He also likes to check the weather, stock prices, and typically uses the same six websites everyday. In the morning John opens up Chrome and the new tab page displays onePage. On onePage he can immediately see the temperature outside and if he want more information he can click on the information where he will be taken to a OpenWeatherMap on a new tab. John then glances to the bottom of onePage to check the stock prices that morning. He then browses the social media streams on onePage and can quickly see what is happening on both facebook and twitter without opening up any new tabs. John then needs to start working on his classes as he just saw that the time hit 10:00 am on the clock app on onePage. So he then clicks on the Ecampus link on the application and is taken to Ecampus on a new tab where he can begin working. At the end of the day John then return to onePage and can browse his social media streams all at once, check the stock prices, and the weather before going to bed.

8. EVALUATION

The team devised an evaluation procedure to determine which of our three design concepts should be preferred and why. This evaluation also extended beyond choosing one base design by guiding our decisions in further development of the chosen interface. Several factors defined our process in which we evaluated our work. This helped shape the final product to look exactly as it is now

Firstly, it was decided that the user must be able to see every component of the interface at all times. This excludes information that may be seen through scrolling on an interior webpage, but aside from this, we deemed it valuable to provide the user with a sense of comfort. By never hiding any information away in tabs, or allowing any overlapping elements, everything may be displayed in a fairly minimalistic style so the user may have a convenient, familiar, and yet practical overall experience. Following this philosophy, we decided to not pursue any additions allowing for modular or resizable elements, as this would give the user more freedom, but would sacrifice much-needed order.

Secondly, we chose to maintain simplicity and preserve quality over quantity. Tying in with the first point of our evaluation design, we found it important to not clutter our page with as much media as possible to seek an information-dense experience. Aside for the need for comfort and familiarity, we chose to place less elements on the page, allowing for three media feeds, and 8 aesthetically appealing icons that link to their respective media sites. This allows our website to function as a brief overview of a user's preferred media, as well as a hub to access other sites quickly from their home page. More justification of this design is that it gives users freedom in a different sense than stated previously. Rather than providing the freedom to design a highly-personalized social media hub, the user may place what they find most important on our page, and quickly leave whenever they wish to browse websites that they want the full experience from.

Lastly, thematic consistency. The ease in which a user not only finds what they are seeking, but actually identifies it is of huge importance. To effectively convey what each piece of the screen does, it is important to create clearly divided sections (while still maintaining fluidity) of elements that share similar functionality. The majority of the page is structured in a grid. Having rows or

columns keeps things clearly organized. Not much needs to be said about this. We decided that grouping our hyperlinks similarly to the displayed pages would preserve the theme, but we needed something to distinguish them. This is why we chose to place all of the different media's logos inside of circles. It actually matches our application's logo but stays distinct from all other elements on the page. The size of each circle conveys that clicking on them will surely do something. Tying back into familiarity, each web page will display in an aspect ratio similar to that of a smartphone. This integrates perfectly with the scrolling nature of various media feeds because most users will quickly understand its use and have seamless interaction with it.

By these three general methods of evaluation, the team was able to constantly critique decisions that were put into the application's interface and improve it for a greater user experience.

9. FUTURE WORK

We feel that our application design would be best suited as a plugin for internet browser such as Google's Chrome. Our application would turn the new tab page to our application. In the future we would like to turn our current application into a Chrome plugin that user could download through Chrome. This would make it really easy for users to have access to our application.

There are a few features that we would like to add to our application. The first letting users be able to change the links displayed on the web page. The current implementation has a set amount of links but in the future we want users to be able to remove or add links to the list up to a set amount. If they link that they add does not have an image associated with it we can use a default picture. Another feature that we would like to add would be to let users change the social media streams that they receive on the right side of the page, including the size and number. The current application only allows three social media streams and they are all set to a default site. We would like users to be able to change what social media site are displayed to them. Users should be given a tool that lets them remove current sites or add a site from a predefined list. The number of sites displayed should also be dynamic, meaning that there could be no social media streams or many up to a preset amount. Users should also be able to drag the edges of each social media stream to change the size, this way some could be larger than other if they are more important to the user. Also, in addition to having a single search bar per site display, a nice feature would be to have a search bar that searches all of the displays at once. Adding direct messaging to our application would be a cool feature that we would let users be able to connect with each other. Users could message each other while using internet browsers without having to pull out their phone or use the direct message services on several different social media sites. As mentioned before, our team wanted to implement some kind of virtual assistant that could aid the user in completing basic tasks such as opening a new tab, searching the web, or providing a news briefing of the top local news. Unfortunately, none of our teammates had outside knowledge of artificial intelligence programming. We also couldn't find an open-source library to help us with this task. In the future, with outside help, we definitely want to add this feature to the OnePage.

The final feature that we would like to add in the future is the page being able to automatically connect to the user's account in each social media site and display information directly relevant to the user instead of the user having to search for users. An example of this is a user goes to our application and the twitter feed on the

page connects to the user's twitter account on loads the user's twitter home page just like they were on twitter.

10. ACKNOWLEDGMENTS

Our thanks to Dr. Frank Shipman for educating us on computer-human interaction and new media.

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