

**ADDIS ABABA INSTITUTE OF TECHNOLOGY**

**CENTER OF INFORMATION TECHNOLOGY AND SCIENTIFIC COMPUTING**

**DEPARTMENT OF** **SOFTWARE ENGINEERING**

**Lecture One Based Assignment**

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February 2020

**1.History of Internet**

[1] The history of the Internet started in the United States in the early 1960s. This was the Cold War period, when the world was bi-polar; The United States and the Soviet Union were competing in expanding their influence in the world, viewing each other with great caution and suspicion. On October 4, 1957 the Soviet Union launched the first space satellite, Sputnik. The Sputnik success necessitated American reaction. It was a question of pride and leadership. The US Department of Defense responded by establishing the Advanced Research Projects Agency (ARPA, 2004), designed to promote research that would ensure that the USA to compete with and excel over the USSR in any technological race. ARPA’s mission was to produce innovative research ideas, to provide meaningful technological impact that went far beyond the convention evolutionary developmental approaches. One of the ARPA offices was the Information Processing Techniques Office (IPTO) which funded research in computer science designed to mobilize American universities and research laboratories to build up a strategic communication network (Command and Control Research) that would make available messaging capabilities to the government.

The Internet had its roots during the 1960's as a project of the United States government's Department of Defense, to create a non-centralized network. This project was called ARPANET (Advanced Research Projects Agency Network), created by the Pentagon's Advanced Research Projects Agency established in 1969 to provide a secure and survivable communications network for organizations engaged in defense-related research. In order to make the network more global a new sophisticated and standard protocol was needed. They developed IP (Internet Protocol) technology which defined how electronic messages were packaged, addressed, and sent over the network. The standard protocol was invented in 1977 and was called TCP/IP (Transmission Control Protocol/Internet Protocol). TCP/IP allowed users to link various branches of other complex networks directly to the ARPANET, which soon came to be called the Internet.

Researchers and academics in other fields began to make use of the network, and eventually the National Science Foundation (NSF), which had created a similar and parallel network, called NSFNet, took over much of the TCP/IP technology from ARPANET and established a distributed network of networks capable of handling far greater traffic. Businesses rapidly realized that, by making effective use of the Internet they could tune their operations and offer new and better services to their customers. So, they started spending vast amounts of money to develop and enhance the Internet.

In 1973, ARPANET was connected to international hosts. File transfer Protocol (FTP) came into existence and developed using a Client Server Architecture. The file-transfer protocol specified the formatting for data files traded over the network. FTP made it possible to share files between machines. Telnet, FTP and TALK were the first applications to become available on ARPANET and are still used in some form or another on the Internet today.

Also, in 1989, Englishman Tim Berners Lee, a researcher at the European research organization (CERN) in Geneva, proposed the idea of an international system of protocols. Building a distributed hypermedia server which would allow Net users to prepare electronic documents that are composites of or pointers to many different files of potentially different types, scattered across the world. Berners-Lee called it the World Wide Web (WWW). He wrote the first WWW client (a browser-editor running under and most of the communications software, defining URLs (Uniform Resource Locator, webpage address), HTTP (Hypertext Transfer Protocol between a server and clients) and HTML (interactive Hypertext Markup Language). His hypermedia software program enabled people to access, link and create communications in a single global web of information.

**1.1 Internet Now and Then**

[2] In 1984, when ARPANET was released from military control and began to merge with the National Science Foundation Network (NSFNET) to form what we now call “the Internet,” the cutting-edge hardware that carried its traffic pushed data at 56 Kilobytes(K) per second [4]. That’s a speed best remembered as the fastest possible in the not-so-distant days before broadband internet. By way of comparison, the average Internet access speed in the US today is 134 Megabytes (MB) per second according to the speed test website [5] which is about more than 150 times faster.

By 1998, there were approximately 150 million Net users in more than 60 countries, representing about 2.5 percent of the world’s population. The vast majority or 130 million of those users were located in the 15 most industrialized countries. Thus, despite its dramatic growth, large disparities in Internet access and usage persisted. A more accurate examination of the late-90’s Internet usage reveals a user rate of 6.5 percent in a small number of high-usage nations and only a 0.5 percent usage rate in the remaining 200 countries.

At the beginning of the 21st Century, the Internet embraces some 300,000 networks stretching across the planet. Its communications travel on optical fibers, cable television lines, and radio waves as well as telephone lines. The traffic continues to grow in a rapid pace. Mobile phones and other communication devices are joining computers in the vast network. Some data are now being tagged in ways that allow websites to interact. Today, the growth of cloud computing is providing powerful new ways to easily build and support new software. Because companies and individuals can rent computing power and storage from services like the Amazon Elastic Compute Cloud, it is much easier and faster for someone with a good idea to turn it into an online service. This is leading to an explosion in new uses for the Internet and a corresponding explosion in the amount of traffic flowing across the Internet.

Reddit.com

Reddit is an American social news aggregation, web content [rating](https://en.wikipedia.org/wiki/Rating_site), and [discussion](https://en.wikipedia.org/wiki/Internet_forum" \l "Discussion) website. Reddit was founded by University of Virginia roommates Steve Huffman and Alexis Ohanian in 2005. Registered members submit content to the site such as links, text posts, and images, which are then voted up or down by other members. Posts are organized by subject into user-created boards called "subreddits", which cover a variety of topics like news, science, movies, video games, music, books, fitness, food, and image-sharing. Submissions with more up-votes appear towards the top of their subreddit and, if they receive enough up-votes, ultimately on the site's front page.

Year Feb 2006

* Only four tabs/navigation bars on the front page.
* Search bar at the right end of the navigations.
* Login form below the search input with radio button to navigate between register and login.
* Latest post is numbered and displayed.
* Footer with only for links.

Year Jan 2008

* login input changed to only two not named inputs.
* below the login added check boxes to customize user reddit to specific reddit like politics, sport...
* all the label in the navigation bar changed but their number remained.
* below the reddit customization check boxes added button to create user defined reddit.
* added few other footer links and user agreement and privacy policy.
* search button replaced with search icon.

Year Jan 2010

* At the very top of the home page added a navigation menu to select many subreddit category.
* Search bar and login form are merged together.
* Search icon disappeared only the input filed present.
* Arrow navigation added to see resent popular posts.
* One additional navigation button added.
* The footer completely changed, larger footer with categorized under different names with each composed of many links.
* The posts start to support images.

Year Feb 2012

* Placeholders are added on the login form inputs.
* Create customized button removed.
* Number of footer links reduced.
* A text containing information about reddit usage was added at the top of the navigation bar

year 2014.

* The informative article background was changed to a shade of slanted colors.
* New article box added below login button that show daily reddit goal with progress bar.
* New buttons namely submit new link and submit new post are added.
* More navigation tabs were added.

Year Feb 2016

* The informative article removed and instead a subscribe email input box added.
* Added input box asking the user interest subreddit.
* The search bar modified by adding a search icon.
* More navigation tabs are added.
* Font and style slightly modified footer.

Year Jan 2020

* The reddit home page takes up the whole screen, not centered.
* The progress bar box replaced with ads box about the premium reddit.
* Nice cartoon background image was added behind the informative article with new button with title ‘Become A redditor’.
* The login page was at the right corner with detailed login entry page.
* The footer was at the end of the page.
* Has input box with read more button so that user can ask questions on current issues.
* It has a drop-down menu to select post from any country and state.
* Become a redditor button is added.

HackerOne

HackerOne is one of my favorite vulnerability coordination and bug bounty platform that connects businesses with penetration testers and cybersecurity researchers. It was one of the first companies, along with Synack and Bugcrowd, to embrace and utilize crowd-sourced security and cybersecurity researchers as linchpins of its business model; it is the largest cybersecurity firm of its kind.

Observation

Year Jan 2005

* The site was generally under construction.
* It only consisted of grey background and pictures with list links.

Year Feb 2009

* The site was still with bugs and didn’t open properly.

Year 2013

* The site home page completely changes to login page with grey texture color background.
* The site has forgot password and sign up options.
* The header title center on the screen.

Year Feb 2014

* The look of the site completely changed to more interactive user experience (UI).
* The navigation bar was fixed at the top while the content slide below it.
* The brand/ logo was to left of the nav bar while other nav items aligned to the right along with sign up and login buttons.
* Below the navigation bar is static background image with text and buttons on it.
* Below the image was another image in line with set of articles.
* The site is divided into section each with slightly different content and background color.
* Multiple language support was introduced.
* The footer was only one line with short links, FAQ, Language, terms and privacy.

Year 2015

* Used more colors and bold contents.
* The navigation bar extended to full screen width.
* Bug bounty status is displayed.
* About us page was added in the home page.
* Click derived slide image gallery was included.
* Better and modified footer with four categories and more links.

Year Feb 2016

* Navigation bar modified with added drop-down menus.
* Fetch live data to display number of online customers.
* Full width video was embedded.
* Horizontal and vertical line dividers are used.
* New ads were added.

Year March 2017

* A blog feature was added.
* The image gallery was replaced with background video.
* Blurred background image that scrolls by slide arrow.
* A jumbotron with title and small description is used.
* Social media links are included in the footer.

Year Jan 2018

* The navigation bar placed on the background pic centered.
* The navigation bar disappears on scroll to the bottom of the page.
* A search button was added.
* Download feature included with download link on the homepage.

Year Feb 2020

* The navigation bar is fixed at the top.
* Contact us button made sticky to the right-side page.
* More bond and attractive text fonts were used with nice color choice.
* Footer populated with more list of links.

HackerOne Assessment

The navigation bar sticks at the top of the page and is always visible for easy access at any point on the page. Enough information is presented on the home page explaining about the company. The website’s color combination is very brilliant; It contains only 2-4 colors. It uses more graphic contents on the home page which is useful to get the attentions of the user. The footer is nice and contains main social media links and quick navigation links. In conclusion the site is excellent vulnerability coordination and bug bounty platform that connects with penetration testers and cyber security researchers with extended hacker101 web training platform.

Internet Movie Database

Internet Movie Database (IMDb) is an [online database](https://en.wikipedia.org/wiki/Online_database) of information related to films, television programs, home videos, video games, and streaming content online – including cast, production crew and personal biographies, plot summaries, trivia, fan and critical reviews, and ratings. Originally a fan-operated website, the database is owned and operated by IMDb.com, Inc., a subsidiary of Amazon.

Observation

Year Oct 2000

* The site looks unattractive to users.
* Font and content layout are poor.
* The search bar is placed at the left section.
* The site has orange background color which is constant throughout the site homepage.
* Site is sectioned into three columns the left right-side news, ads and short links.
* The middle section taking about 80% of the website.
* The footer is divided from the rest of the page with horizontal divider line.
* At the top is the navigation bar each with link tag.

Year April 2001

* the site essentially is same except for changes in the style of the navigation bar.
* IMDb logo is added to left of the navigation tabs.

Year Jan 2005

* Logo was enlarged.
* More navigation tabs are added.
* The list of movies in the middle section of the site are ordered by placing images to left of articles describing the movie.
* Additional web search input is added in addition to IMDb database search.
* Both side sections are extended to the end/bottom of the page.

Year April 2008

* The search bar is moved to the top of the page in the middle section below the navigation bar.
* The background color is limited to the left side section and the nav bar while the rest become white.
* Login and register buttons are added to the right end of the navigation bar.
* Tables are used in the middle section to IMDB TV schedules.
* The footer contained more links with an extended horizontal line to separate it from the other sections.
* Unorder lists are used.
* Ads are removed on the April

Year Jan 2010

* The homepage is centered.
* The background color is grey.
* Search input box stationed at the top of the page above the nav bar.
* The website header has black background picture.
* The navigation bar has dropdown menus.
* Side articles contain ads.
* More videos are present in the site content.
* Vertical divider line separates the middle section from the middle.

Year Feb 2012

* The website reduced to two sections.
* The right section contains contents with image containers with caption.
* The right section has many container cards with information and links.
* The contents are divided with container having images and articles.

Year March 2016

* The right section content style changed to list.
* To the right of the search bar added social media links like twitter, Instagram and Facebook.
* The division contains list of minor containers which are composed of image, title and movie description.
* The section has also tabs to switch between different contents.
* At the bottom are links to show more detains on the contents.
* Recently viewed contents are show at the bottom of the list with horizontal list of viewed items.
* The footer is divided into two section the upper containing social media links and navigation links.
* The bottom of the footer has list of horizontally placed links.

Year Feb 2018

* The list of contents replaced with horizontal list of images.
* Image galleries are included in the middle section list.

Year Jan 2020

* The navigation bar extended to the full width of the screen.
* All navigation tabs are hidden in the drop-down menu.
* The website background image changed to black covering the whole DOM.
* Below the navigation bar is large size video trailers.
* Sections each with image or videos are listed.
* The site layout completely changed.
* Each section has list of medias.
* The footer contains horizontally aligned list of social media icons.

Amazon

Amazon is an American multinational technology company based in Seattle that focuses on e-commerce, cloud computing, digital streaming, and artificial intelligence. It is considered one of the Big Four tech companies, along with Google, Apple, and Facebook. It's been referred to as one of the most influential economic and cultural forces in the world. Amazon was founded by [Jeff Bezos](https://en.wikipedia.org/wiki/Jeff_Bezos) in [Bellevue, Washington](https://en.wikipedia.org/wiki/Bellevue,_Washington), in July 1994. The company initially started as an online marketplace for books but later expanded to sell electronics, software, video games, apparel, furniture, food, toys, and jewelry.

Observation

Year Feb 2001

* The amazon logo is at the horizontal center with other navigation bars below it.
* At left of the page is side news and search bar.
* Above the footer is a search bar with orange background color.
* The footer contains number of links in un organized manner.
* At the right side of the page is advertisement pictures.
* The shop cart is at the top next to the logo with some margin.
* The used images and text in mixed way.

Year Jan 2004

* More readable navigation bar with item ads in both ends.
* The middle section of site contains shop items advertisement.
* The content is mostly white space while the side news extends to the end.
* Vertical list of links is added in the bottom of the footer area.
* The right-side section is thin area with ads and new information on items.

Year April 2006

* Site contents are more organized in three columns.
* The middle section contains different products image and descriptions.
* There is list of sample items to be purchased.
* The left section contains long category of items and new stories.
* The right section also has individual item descriptions with html borders.
* The long list of links in the footer were removed.
* The site is responsive to some extent.
* At mobile screen size the site is navigated with scrollers.
* The navigation has blue background while the rest is white.
* Left and right-side item ads were removed.

Year Feb 2008

* The amazon logo moved to the left end of the page.
* The shopping cart and the login buttons moved to the right end of the navigation bar.
* Items are listed according to their categories.
* Amazon blog is introduced with button below the cart.
* A web search is added.

Year Feb 2010

* The item search box extended the middle section of the site.
* The cart and wish list buttons aligned to left of search bar.
* Footer categorized in 3 columns with list of links and amazon logo.
* The right section of the site was removed.

Year Jan 2014

* The left division of the site is removed.
* Introduction and advertisement articles with image are put below the search bar on the home page.
* The right section of the site has ads and list of item categories with discount signs.
* The footer takes about 75% of the site width while the whole website extends to full width.
* The middle contents are list of items in their category with image and captions.
* The logo and navigation bar are moved to the left-top end of the page.
* The search bar covers the full middle section.

Year March 2016

* The site went through major changes in the layout.
* The navigation bar took the whole site width with black background color.
* The site content is centered and takes about 80% of the full width.
* The is image background at the beginning of the [age with text and logo on top of it.
* The search bar placed to the right of the amazon logo.
* Sign in and cart buttons are placed to the right of the search bar.
* Navigation items are below the search bar in the second column.
* The site content is small compared to the previous years.
* The content area below the image is divided into four sections.
* Gif images are used.
* The footer takes larger area with set of categorized links in two rows.

Year Jan 2018

* Slider image gallery is added.
* Set of images are populated in the main section.
* The site is divided into two section to a ratio of about 3:1.
* The smaller section has special amazon offers.
* The footer takes the whole screen on scroll.
* The footer background color is black which differs from the contents background color.
* Different language support is added in the footer area.

Year Jan 2020

* More navigation tabs are added filling the are across.
* Below the slider different cards are used to display each category of items like clothes, shoes, electronics.
* A row of sectioned divisions and cards with white background are listed.
* The right section of the page was removed.
* The website background color was set to light-grey color.

WordPress

WordPress was released on May 27, 2003, by its founders, American developer Matt Mullenweg. WordPress (WordPress.org) is a free and open-source content management system (CMS) written in PHP and paired with a MySQL or MariaDB database. Features include a plugin architecture and a template system, referred to within WordPress as Themes. WordPress was originally created as a blog-publishing system but has evolved to support other types of web content including more traditional mailing lists and forums, media galleries, membership sites, learning management systems (LMS) and online stores. WordPress is used by more than 60 million websites, including 33.6% of the top 10 million websites as of April 2019.

Observation

Year Sept 2003

* The site is very small with white content background and the rest grey pattern.
* The content takes about less than 50% of the full width and height.
* The head title is placed at the top of the page above the navigation bar.
* Navigation items are aligned horizontally written in plain text.
* Below the nav bar is articles about the site.
* At the bottom is a footer and email subscription input box.
* The page doesn’t scroll.

Year Feb 2005

* The content area divided into two section with ratio of 3:1.
* The height of extended to full height while the width remains the same.
* Image was added in the article.
* The right section describes the features of the WordPress.

Year Jan 2007

* Scroll came to effect due to more content
* The site uses some JavaScript and CSS
* The CSS and JavaScript doesn’t load fast
* The JavaScript is placed in the header which is why the JavaScript effect is not applied

Year May 2010

* The site reflects proper use of CSS styles.
* The navigation bar has a black background color.
* The site content is centered.
* The website doesn’t have scroll effect.
* Search bar is added at the right end of the site.
* Navigation tabs are styled with light-blue active item color.
* The footer is one line set of links separated from the page content with horizontal line divider.

Year Jan 2013

* The are no major changes except colors and the content.
* Social media links are listed in the footer area.
* The website color is uniform with some change in the alpha values.
* The site content is grouped to four columns with almost similar ratios.
* The nav items have drop down effect.

Year Feb 2015

* The navigation bar background color is set to black.
* The search bar is hardly visible.
* The footer is modified to contain more categorized list of links.
* More navigation items are added.

Year Feb 2017

* The site reflects nice use of colors.
* Large size images are placed.
* The site divided into horizontal sections.
* Full sized image extended to full width of the site
* Large sized icons are utilized.

Year Jan 2020

* The site introduced the use of parallax effect with CSS.
* More contents are added.
* More uniform fonts and colors are used.

**References**

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