Chapter Three

Communication, Internet and the World Wide Web

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1.   Definition of Computer Networks and Communication

1.1   A computer network

Is a collection of computers and devices connected together via communication devices and transmission media. For example, it may connect computers, printers and scanners.

1.2   Definition of Communication

Communication describes a process in which two or more computer or devices transfer data, instructions and information. See fig. 3.1.

Figure 3.1: Computer network.

2.   The Importance/ Advantage of Computer Networks

- Sharing of devices such as printer and scanner.
- Sharing of program/software.
- Sharing of files, data and information.
- Sharing of single high speed internet connection.
- Better communication using internet services such as e-mail.

3.   Types of Computer Networks

1) Local Area Network (LAN): a local area network as shown in fig. 3.2 is a network that connects computers and devices in **a limited geographical area** such as a home, school computer laboratory, office building.

2) **Metropolitan Area Network (MAN):** a metropolitan area network is a high speed network that connects local area networks in a metropolitan area such as city or town, see fig. 3.3.

3) **Wide Area Network (WAN):** a wide area network as depicted in fig. 3.4 is a network that covers <u>a large geographical area</u> such as country or the world. The internet is the world's largest WAN, the internet is the largest computer network in the world, connecting millions of computers.
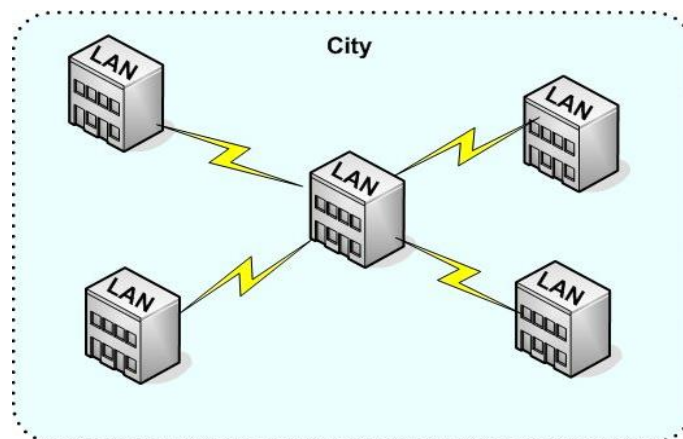

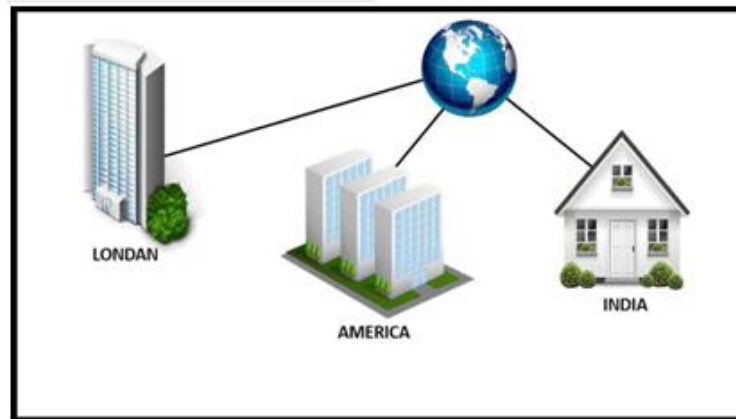Figure 3.2: Local area network.

Figure 3.3: Metropolitan area network

Figure 3.4: Wide area network

4.   The World Wide Web (WWW)

When most people think of the internet, the first thing they think about is the World Wide Web. Nowadays, the terms "internet" and "World Wide Web" are often used interchangeably— but they're actually not the same thing.

- The internet is the physical network of computers all over the world.
- The World Wide Web is a virtual network of web sites connected by hyperlinks (or "links"). Web sites are stored on servers on the internet, so the World Wide Web is a part of the internet. Imagine a spider web as in fig. 3.5 with complex links and connections and points where threads touch! This is what the World Wide Web is like!
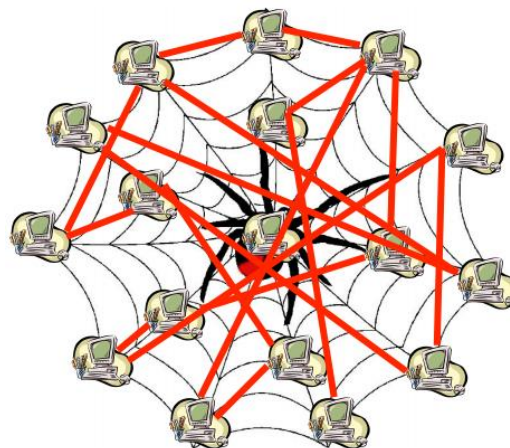

Figure 3.5: World Wide Web.

4.1   How the Internet works!

Internet information is held on Web pages. This is a document developed using a computer coding language such as HTML (hypertext mark-up language).! Web pages are much more colorful and interactive than word documents, other types of documents, or even books! They are very dynamic and flexible and can contain different sorts of files like text, images, videos, audios, and games

4.2   URL – Uniform Resource Locator!

Each Web page has its own, unique URL or Uniform Resource Locator, see fig. 3.6.! This is the Web site's particular Internet address. Like a postal address, it needs to be accurate to work. You wouldn't send a letter to No. 22, when your friend lives at No. 20.! And when you visit people, you need to know the exact street address to ensure you visit the right house. It's the same for each Internet address!

Figure 3.6: URL example.

4.3   Hyperlinks!

Web pages can contain links to other pages within the Web site or to other Web sites. These are called hyperlinks. Hyperlinks can be seen as underlined words. You might also find that an image is a hyperlink. Behind each hyperlink is computer code linking to another part of the Web site or containing a URL of another Web site! When you place the cursor arrow over the link (whether it's an image, word or a phrase), the cursor usually turns into a hand with a pointer finger as in fig. 3.7. If you want to see what's next, simply click the mouse and one of these links will take you to another page or a different Web site. Take a look at the status bar at the bottom of your screen and you will see where you're going! The URL should appear here.

Figure 3.7: Hyperlink example.

4.4   Breaking down a URL

https://www.bau.edu.jo/elearning.aspx

https: stands for Hyper Text Transfer Protocol Secure, this relates the document directory for a Web page.
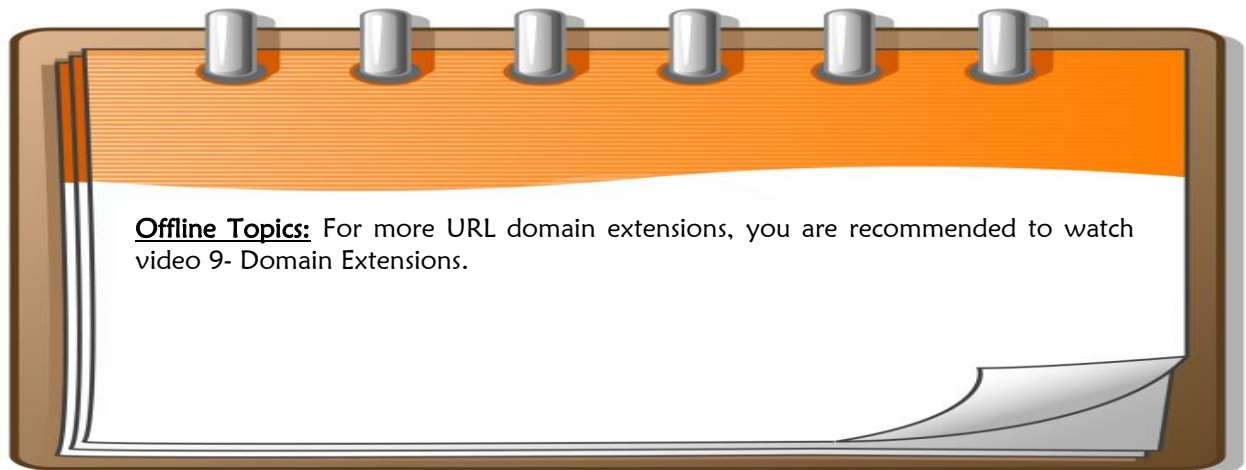
www: refers to the World Wide Web, tells the web browser to find the part of the internet known as the World Wide Web. (Some Web pages don't have www)

bau: this is the domain name and gives details of the university, company, or organization that owns the domain. Most companies have domain names, transferred from their company name.

edu: the domain extension which tells the type of web page that is being looked at. For example, "edu" is short for educationally-based institution such as school or university.

jo: country name. For example, "jo" is short for Jordan.

elearning.aspx: tells the filename of the webpage.

<u>Offline Topics:</u> For more URL domain extensions, you are recommended to watch video 9- Domain Extensions.

5.   Finding Your Way Around Your Internet browser

An internet browser or web browser is the tool that you use to access the World Wide Web. In order to get the most out of the Web, it's important to understand the various features of a browser. Today, **Google Chrome** and **Internet Explorer** are the most popular web browsers. Other browsers include **Firefox**, **Safari**, and **Opera**. Each one has its own look and feel, but they have the same goal: to display web pages correctly. To get the most out of your web browser, there are some basic concepts that you need to be familiar with, including navigation, downloading, bookmarking, tabbed browsing, and plug-ins.

Google Chrome:

Google chrome is a browser made by Google and offered as a free download for desktop and mobile devices.

Start Using Chrome Browser

Start your browser by clicking Google chrome icon on your desktop or from taskbar. Let's figure out the different elements of the web browser.

1) Tabs

Tabs are the most important part of a browser. Each tab displays a link. Chrome's tabs appear at the top of the browser, like so in fig. 3.8:
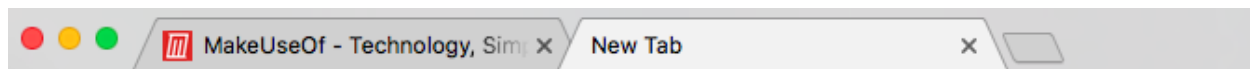

Figure 3.8: Google chrome tabs.

You can create a new tab by clicking the small icon next to the last tab. You can also go to **Menu > New Tab**.

2) Omnibox

Under the tabs is a single bar, for both your searches as well as to go to sites. It's called **the Omnibox**, see fig. 3.9. By default, it uses Google Search, but you can change this in settings. You can also type in a website address and press Enter to visit the site directly.

Figure 3.9: Google chrome Omnibox.

3) Menu

Next to the Omnibox, you'll see the Menu icon. It looks like three vertical dots. Click it to see the full Chrome Menu like in fig. 3.10.
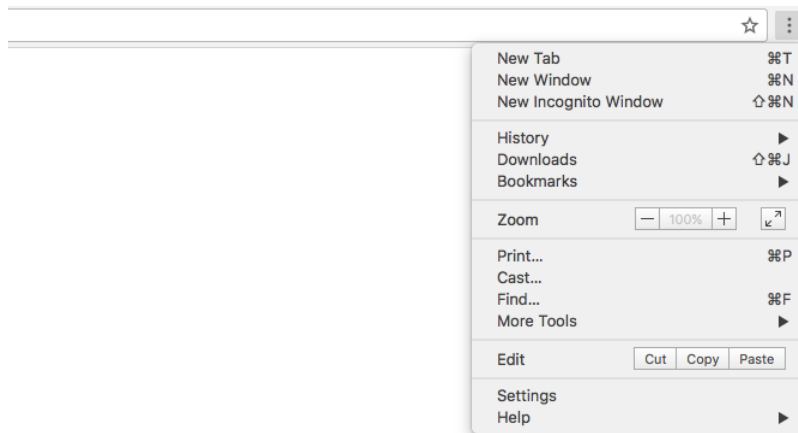

Figure 3.10: Google chrome menu.

4) New Window

You can also have two separate Chrome windows running simultaneously. Each window will have their own set of tabs in it. To start a new window, go to **Menu > New Window**.

5) Startup or New Tab Page

When you start Chrome or open a new tab, the default page looks like this in fig 3.11:
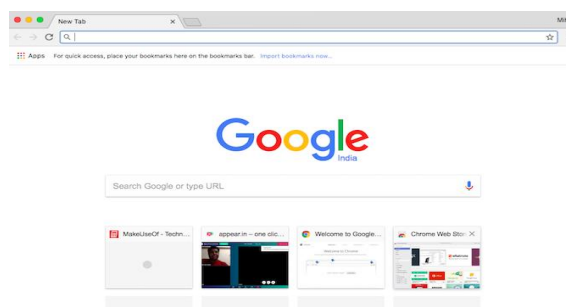

Figure 3.11: Google chrome default page.

You get the Google logo, a Google search bar, and eight thumbnails of your most visited websites. In settings, you can change this to show the last tabs you had open. It's a good idea to move your most commonly used bookmarks to the bookmarks bar. This bar can be always visible under the Omnibox or show up only on the New Tab page. To toggle the view, go to **Menu > Bookmarks > Show/Hide Bookmarks Bar**, *see fig. 3.12*
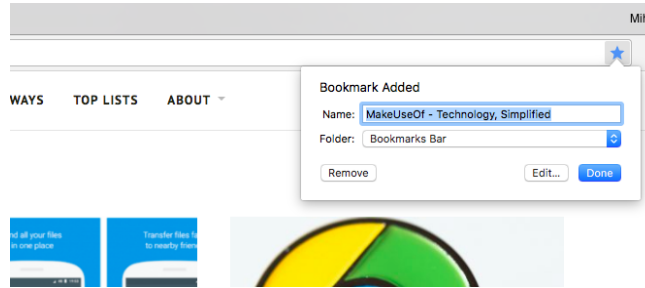

Figure 3.12: Add bookmarks to chrome.

6) History

History is a record of all the pages you have visited, see fig 3.13 This way, you can quickly find a link whose tab you closed. To access history, go to **Menu > History > History**, or access one of your recently closed tabs from the rollover.
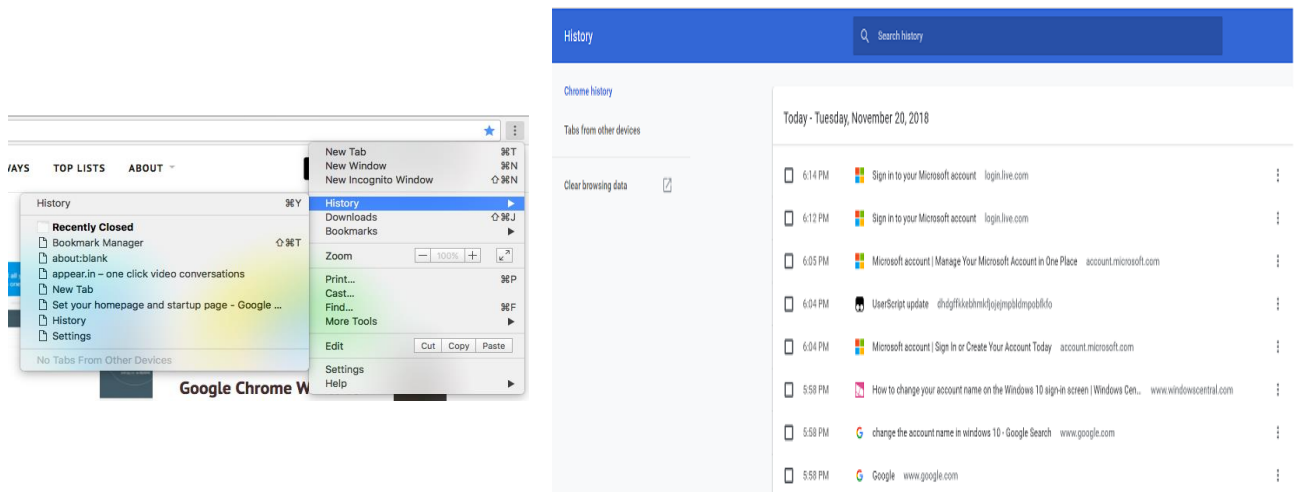

Figure 3.13: Chrome history.

7) Downloads

The Downloads pane lists all the files you have downloaded from the internet. You can bring it up through **Menu > Downloads**. By default, Chrome uses the computer's designated default Downloads folder. You can set a custom folder in Chrome's settings.

6.   Search Engine

Search engines are specialized web sites that help you find what you're looking for on the Web. All you have to do is type in one or more keywords, and the search engine will look for matching web sites from all over the Web. Search engines help to locate information on World Wide Web. Several search engines available today; **Google, Bing, Yahoo** and **AltaVista**. Many search engines have a built-in search bar like in fig. 3.14. To do a search, just type what you're looking for (known as the search terms) in the search bar, and then press Enter. Your browser will then take you to the search engine's web site to show you the search results, which is a list of all of the web sites that contain your search terms.
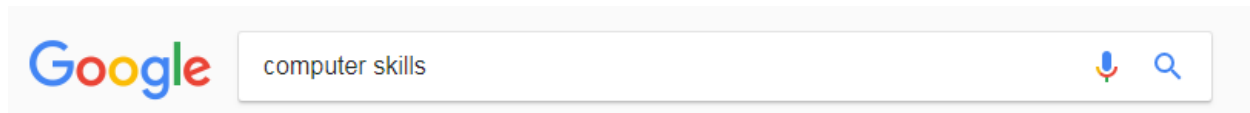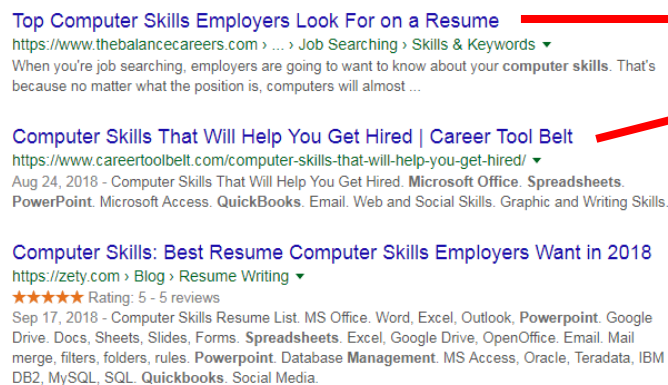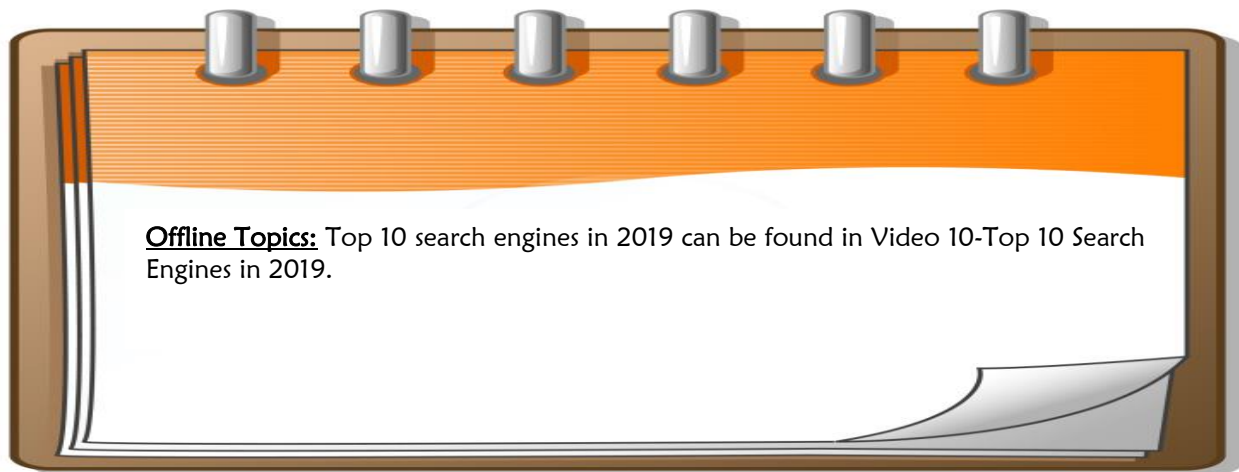
Figure 3.14: Google search bar.

Figure 3.15: "computer skills" search result.

<u>Offline Topics:</u> Top 10 search engines in 2019 can be found in Video 10-Top 10 Search Engines in 2019.

7.   Email Addressing

Email, short for Electronic Mail, consists of messages which are sent and received using the Internet. There are many different email services available that allow you to create an email account and send and receive email and attachments, many of which are free. Such as <u>Gmail</u> and <u>Yahoo mail</u>.

Figure 3.16: Gmail and Yahoo mail.

8.   Understanding the Cloud: What is the cloud?

You may have heard people using terms like the cloud, cloud computing, or cloud storage. But what exactly is the cloud? Simply put, the cloud is the Internet; which is iCloud—more specifically, it's all of the things you can access remotely over the Internet. When something is in the cloud, it means it's stored on Internet servers instead of your computer's hard drive.

Why use the cloud?

Some of the main reasons to use the cloud are convenience and reliability. For example, if you've ever used a web-based email service, such as Gmail or Yahoo! Mail, you've already used the cloud. All of the emails in a web-based service are stored on servers rather than on your computer's hard drive. This means you can access your email from any computer with an Internet connection. It also means you'll be able to recover your emails if something happens to your computer.
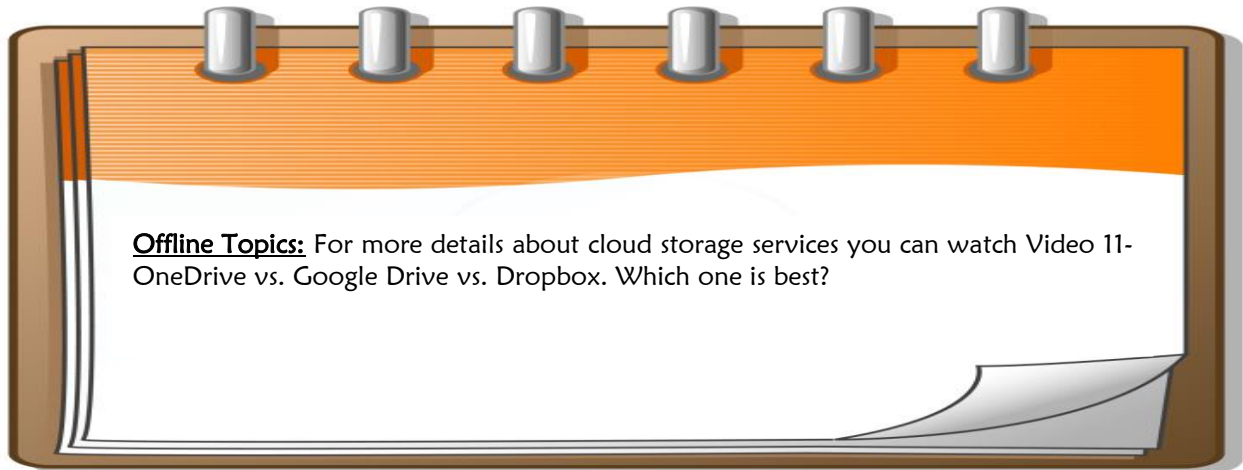

Figure 3.17: Information in the cloud.

Let's look at some of the most common reasons to use the cloud.

- File storage: You can store all types of information in the cloud, including files and email. This means you can access these things from any computer or mobile device with an Internet connection, not just your home computer. Dropbox , One Drive and Google Drive are some of the most popular cloud-based storage services, see fig. 3.16.

Figure 3.18: OneDrive, Google Drive and Dropbox cloud-based storage services.

Offline Topics: For more details about cloud storage services you can watch Video 11-OneDrive vs. Google Drive vs. Dropbox. Which one is best?

▪ File sharing: The cloud makes it easy to share files with several people at the same time. For example, you could upload several photos to a cloud-based photo service like Flickr or Google Photos or iCloud Photos, then quickly share them with friends and family.

Figure 3.19: Cloud-based photo service

▪ Backing up data: You can also use the cloud to protect your files. Apps like Mozy and Carbonite automatically back up your data to the cloud. This way, if your computer ever is lost, stolen, or damaged, you'll still be able to recover these files from the cloud.

9. Web App

Previously, in chapter 1, we talked about desktop applications and mobile applications. But there are also web applications—or web apps—that run in the cloud and do not need to be installed on your computer. Many of the most popular sites on the Internet are actually web apps. You may have even used a web app without realizing it! Let's take a look at some popular web apps.

- Facebook: Facebook lets you create an online profile and interact with your friends. Profiles and conversations can be updated at any time, so Facebook uses web app technologies to keep the information up to date.
- Pixlr: Pixlr is an image editing application that runs in your web browser. Much like Adobe Photoshop, it includes many advanced features, like color correction and sharpening tools.
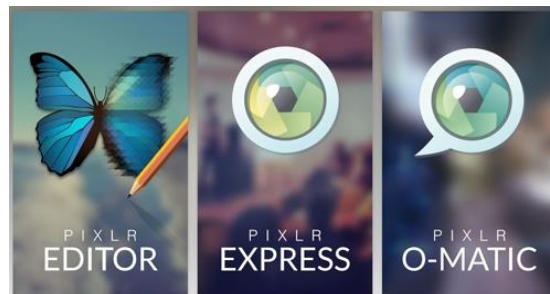

Figure 3.20: Pixlr Application

- Google Docs: Google Docs is an office suite that runs in your browser. Much like Microsoft Office, you can use it to create documents, spreadsheets, presentations, and more. And because the files are stored in the cloud, it's easy to share them with others.

Figure 3.21: Google Docs