



# ubuntu

## User Research and Usability Benchmarks Report

By Team Ubun Pro

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# User Research Plan

**Background:** Ubuntu is the most popular Linux distribution and has constantly been evolving. It is free to install so it is worthwhile to give Ubuntu a try. However, non technical users may have trouble operating Ubuntu if they are switching over directly from Windows and Mac OS. Ubuntu's interface and software is a whole new experience for regular computer users and it may take some time for them to become comfortable with it.

**Goals:** Determine our users' favourite features and daily tasks on a computer, and provide solutions to make Ubuntu more usable for their needs.

## Research Questions:

- What are the most commonly used apps?
- What do people do on computers?
- What are the most important characteristics of a good operating system?
- What makes for an easy to use operating system?
- How are people performing their daily tasks?
- What is stopping users from using free/alternative OS such as Ubuntu?
- How is Ubuntu different from the rest?

**Methodology:** A user research will take place in a coffee shop with 6-8 participants. Each session will last 30 minutes. Every participant will be screened briefly to ensure they are non technical computer users who have never used Linux nor Ubuntu before. Afterwards, participants will be asked short questions to determine their daily tasks and preferred applications on a computer. The last portion involves the participants playing around with Ubuntu and voicing their personal opinions about the system.

## Participants:

- Non technical computer users
- Age 19 - 40
- Uses a computer for more than a couple of hours in a day
- Have never done any programming before
- Use a large variety of applications in their day to day computer tasks
- Heard about Ubuntu but did not make the switch or do not know how

# User Research Report

## Executive Summary

Computers are widely used everywhere in today's world. The most popular operating systems used by the vast majority of non technical computer users are Windows and Mac OS. Ubuntu is not as popular within this specific group as it is with developers. The features of Ubuntu may induce a different level of feel for users accustomed to the interface and software available in Windows and Mac OS. The goal of this user research was to determine user behaviour on a computer, how they complete their tasks, and how they feel about Ubuntu.

We have based our research around non technical computer users between the ages of 19 and 40 that have little to no knowledge of the Ubuntu system. We feel that these users spend the most amount of time on a computer and are more likely to utilize various applications on a computer as well. The interview consisted of general questions to find out what common tasks our participants performed on their computers and what they use to help them perform the tasks. The second portion of the research consisted of our participants viewing the interface of Ubuntu and trying out the system for themselves.

The results of our research showed that all of our participants have used either Windows or Mac OS before and lean towards one of the systems as their preferred choice. Astoundingly, all of our participants chose Windows as their everyday operating system due to its simple and easy to use interface. Generally, our participants have files and folders strewn everywhere and are accustomed to using the search bar to find their files. However, they find themselves spending too much time organizing files and locating them because the search bar does not give them the folder. They would like a fast and clean way to organize files at the touch of a button, something that is not offered currently for Windows or Mac OS. The majority of the participants are satisfied with the preinstalled applications available on Windows and Mac OS, but also install third party applications through Google. The participants also do not change the settings on their computer apart from the wallpaper. After testing out Ubuntu, our participants stated that it has a simple yet aesthetically pleasing interface. They noticed the interface's similarities to Mac OS and would not mind using it just for a day.

Overall, we saw very similar comments and behaviours across our selected participants. The participants are hesitant to try new technology only because they have been so accustomed to using their current system of choice for so long. Since they are non technical computer users and have not been exposed to applications more complex than what they have used, they may not know where to begin searching. Although they are familiar with their system of choice, they do not fully understand every single feature it has to offer. In addition, they do not know where to find many settings so they do not change them. The simplicity of Ubuntu is enough to capture their attention, and they are able to figure out most of the basic functions. Many have expressed more interest in Ubuntu but are hesitant to use it long term. With additional changes and improvements that tailor to our participants' needs, it is possible to draw more users to Ubuntu and make it more user friendly.

## Detailed Findings

Our research found that our participants have all tried Windows and Mac OS before. One user has used Linux before but never experimented with it for very long. All of the participants prefer Windows over Mac OS because it has a nicer looking interface and is also easy to use.

The routines of each participant on a computer were all very similar. Our participants generally started with checking their emails, social media accounts, then moved on to other forms of web browsing. Web browsing such as researching reviews, YouTube, and looking up news were very common among our participants. Next up is researching and working on school work. The participants researched on the web, wrote files and saved them on the computer.

There were a number of applications used by our participants, but most of the applications were preinstalled in the system. The most popular web browsing app used by the participants was Google Chrome, other web browsing apps were not used. Microsoft Office apps were also very popular amongst the participants, who stated they use it almost everyday. Microsoft Word was used by all of our participants to create documents for work and school. Microsoft Excel and PowerPoint were the next most popular Microsoft Office apps used for the same purpose. One participant uses paid third party apps that are not preinstalled in Windows or Mac OS. The apps used were Adobe Lightroom and Portrait Editor, which also are not available on Ubuntu.

As for file organization, there was no emphasis on creating an organized structure for all files and folders. The participants did not want to bother with neatly organizing everything, with one participant noting that a built in feature which would sort and organize his files without any effort would be their top priority. The most common method of file organization was to simply dump all the files onto the desktop or have some folders to put related items together. All of our participants used the built in search bar to search for their files. When searching for their files by navigating through all the folders, our participants noted that they spent way too much time searching for their files.

Our participants initial reactions when they see Ubuntu for the first time is that they like the simple layout and that it looks like the interface on Mac OS. One user did note that they didn't like how similar it looked to Mac OS and the taskbar buttons, especially the search button, can be a little vague. The participants were not able to determine what the icon for the search button meant until they clicked on it. The basic functionalities worked the same as other systems, and they were able to figure out most of it by playing around with it. The majority of our participants are happy to do their daily tasks on Ubuntu for a day and state that they could become familiar with the system within a day or two.

## Participant Question List: Interview

### Participant Screening





1. Have you ever heard of Linux or Ubuntu?
2. Do you use a computer for long periods at a time?
3. Do you do more than just web surfing?

### Interview Questions

1. What operating systems have you used before
  - a. What is your preferred operating system?
  - b. What are your reasons for choosing it over the other?
2. What is your normal routine on a computer like?
  - a. What is the one element that you can't live without?
3. What are some of the tasks that you do?
  - a. Can you walk me through them?
  - b. What do you use to help you complete your tasks?
4. What applications do you use most often?
  - a. Which ones are used more frequently?
  - b. How much time do you spend on each one?
5. Which preinstalled applications satisfy your needs?
  - a. What other third party applications do you download?
  - b. Where do you go to install third party applications?
6. What sort of customizations do you do for the system?
  - a. How do you change the overall appearance?
  - b. What settings do you customize?
  - c. How easy is to find the settings?
  - d. What else would you like to be able to customize?
7. What is your method of finding things fast on a computer?
  - a. How do you locate files?
8. How do you organize your files and folders?
  - a. How would you describe your method of shifting files and folders around?
9. Here is Ubuntu, what are your first thoughts?
10. What do you think each item on the screen does?
11. What do you recognize right away?
12. What is your experience like with Terminal?

## User Model

In short, personas are fictional characters that represent users. The model makes correlations between the characters, and picks out key demographics, behaviors, needs and goals. This allows the team to begin refining their characters into cohesive personas that represent their interpretations of the target audience.

Demographics	Alex	Toby	Irene	Lacy
				
age	32	20	26	40
sex	male	male	female	female
occupation	engineer	student	sales	Store manager
education	master	college	Bachelor	college
<b>Description/Behaviors</b>				
Social life	Social life for him is very few because he has to do a lot of researches and reports. Therefore, he usually uses email to discuss the work with his colleagues. For his hobby, he likes watching movies on YouTube.	Toby loves technology and has to be seen with the newest digital gadgets. He owns a high-performance gaming laptop with a Windows installed, and he loves using it to do everything he can. Downloading movies, surfing the web, and writing blogs about technology are his favourite pastimes.	Uses an MacBook Air to check emails, edit photos, and login to Facebook to chat.	Lucy spends more time to take care of her two kids, she often uses her outdated PC to surf the web. Although she agreed that the current generation PC has a fantastic interface and resolution, she thinks the new operating system is too complicated. She feels that she has to learn a lot still.
Work life	He is a master at 3D modeling. Therefore, he usually uses software in a Windows operating system to do 3D modeling.	He is passionate about experiencing the newest operating system. He is always looking for fun features. He frequently customizes his PC software and	Uses a laptop with Windows installed in a corporate office and when travelling. Her daily tasks include communicating with others, creating presentations,	She has a tablet in her workspace. She only spent two hours to learn how to use it. It is practical, portable, and it has a well designed interface. There is no need to

		hardware. He likes to do things his way.	budgets, and reports.	customize the tablet.
personality	Easy-going and knowledgeable	Outgoing and personable	Charming and ambitious	Rational and hard-working
<b>Needs and goals (concerns/ Pain points)</b>				
	Keep up to date with the newest hardware and software. Ensure he has the high level of computer performance for his work.	Keep up to date with the newest software. Lots of features on his PC for him to play around with	Needs a compatible operating system that can handle all of the tools she uses for her business related work.	Simple and clear user interface that is easy to use and doesn't have too many complex settings.

## Task Inventory

Tasks	Estimated Importance	Estimated Frequency
Find a file	High	High
Open an app	High	High
Change mouse speed	Low	Low
Change brightness	Low	Low
Change to battery save mode	Low	Low
Open external USB drive	Low	Low
Turn on/off wifi	High	High
Joining network	High	High
Setup an account	High	Low
Open a file	Medium	High
Switch to another application	Medium	Medium
Clear all screens out of the way	Low	Low

Add and change input device	Low	Low
Change language	Low	Low
Change location	Low	Low
Turn on/off notifications	Low	Low
Add new workspace	Low	Low
Change workspace	Low	Low
Change fan speed	Low	Low
Change an icon	Low	Low
Change time and date	Medium	Low
Open calculator	Low	Low
Take a picture with the camera	Medium	Medium
Mute microphone	Low	Low
Configure audio	Low	Low
Install/uninstall application	High	Medium
Move taskbar	Low	Low
Pin application to taskbar	Low	Low
Create shortcut	Low	Low
Copy/paste/select all	Medium	Medium
Hide/show files	Low	Low
Enlarge view	High	High
Find ram usage	Low	Low
Shut down/restart	Medium	Medium
Update operating system	Medium	Low
Free up storage space	Low	Low
Find downloaded files	High	High
Backup hard drive	Low	Low
Change account password	Medium	Low
Scan for virus	Low	Low
Keyboard shortcuts	Medium	Medium



Share files on server	Low	Low
Project to secondary monitor	Low	Low
Open and edit documents	High	High
Change wallpaper	Medium	Medium
Set default applications	Low	Low
Create/delete file	High	High
Rearrange icons	Medium	Medium
Sort files	High	Medium
Email Setup	High	High

# Usability Test Report

## Introduction:

The Ubuntu operating system is one of the most popular Linux based operating systems available today. Since its release, it has become the go-to choice for IT and computing professionals such as web system administrators and programmers. Although Ubuntu has a modest success in the professional market, it has yet to capture a wider audience in the casual computer user market that is dominated by Microsoft Windows and Apple's Mac OS. The reason is that the transition from a familiar space to a strange new operating system is a challenging obstacle for users to overcome. We conducted a live and on site usability test in interview format with the latest version of Ubuntu, 16.10, to find out how well the user navigates around the system to complete their daily tasks. This test captures each participant's navigational choices, task completion rates, comments, overall satisfaction ratings, and feedback.

## Executive Summary:

The usability test interview was designed to test how well our target users complete their daily tasks on the latest version of the Ubuntu operating system. Based on the findings from the User Research interviews, the test uses a list of core tasks that are closely related to our target users' routines on a computer, including tasks on finding and organizing files, using and installing third party applications, and customizing system settings. The usability test took place in West Mall Center at SFU Burnaby campus in the afternoon. All participants were selected to reflect a typical target user. The think aloud method was used when conducting on-site interviews. There were six participants and each interview took around 20 to 30 minutes to complete.

The overall task success rate is 53%, which is relative low considering the overall easiness of the tasks. Task 4 has a 100% success rate, and Task 1 has the second highest success rate at 83%. Surprisingly, the easiest task, Task 9, has the lowest success rate at 16%, and the hardest task, Task 6, has a 25% success

rate. No task completely failed. The results show the participants are unfamiliar with the Ubuntu operating system and are having trouble performing their routine tasks. This result is further supported by the system usability scale (SUS) score, which is 41 and is a Fail grade. The participants found the operating system marginally consistent and intuitive to use, and showed little interest using the operating system long term.

This reports contains the following sections:

- Methodology
- Interview Sessions
- Participants
- Task Success Matrix
- Detailed findings on Task Completion Success Rate
- System Usability Scale table
- System Usability Scale score summary

## Detailed Findings:

**Methodology:** Based on the results from User Research interviews, we found that our users' behavior deviate from our original set of design goals. The set of daily tasks which the user identified as important are different from our earlier focus and are much simpler than our planned set of core tasks. We designed the interview method with the read aloud method because we want to find out more about the system elements which the user interacts with most frequently, and gain more insight on our users' thought process when they are navigating through the operating system to achieve a certain goal. The on-site and live interviews makes sure the users are not purposely prepared for the test and the thinking aloud method allows us to understand their goals and actions. The majority of the tasks were designed based on the essential activities identified from the User Research interviews, and the rest were identified by us as the most important supporting elements for those activities.

**Interview Sessions:** The usability test interview was conducted on-site and live around the first, second, and third floor in West Mall Center at SFU Burnaby Campus. The test machine used was a laptop running a default Ubuntu 16.10 LTS version natively. This Sony Vaio T13 laptop has a traditional and bland clamshell design with a compact 80% ISO layout keyboard and a typical sized touch panel trackpad. Fresh guest account with wifi internet access is provided as the starting test point for each participant. Pre-selected screening questions (provided in participant question list section) were used to select the targeted users as the participants. Helpful tips or hands on assistance were not offered at any point, and the participants was asked to complete the tasks individually using the thinking aloud method with no time constraint. The participants were allowed to skip a task if they chose to give up. A single interviewer and four observers were used in each interview. Each interview session lasted around 20 to 30 minutes. Both verbal and written instructions were used. After the last task was completed, the interviewer asks the participant to rate the overall experience with the system usability scale.

**Participants:** All participants are selected based on their zero to limited experience with the Ubuntu operating system and their daily activities on PC. They are casual users and are familiar with Apple Mac OS or Microsoft Windows. Their ages ranged from 19 to 40, based on their appearances and occupations. Six participants were involved in testing on Oct 26th, 2016. Of those participants, four are female and two are male.

## Task Success Matrix (TSM)

Legends: **S**: Success(100%); **P**: Partial Success(50%); **F**: Failure(0%)

Tasks/ User	1	2	3	4	5	6	7	8	9
A	S	S	S	S	S	F	S	F	S
B	F	F	S	S	S	F	S	S	F
C	S	F	F	S	S	S	S	F	F
D	S	F	F	S	F	F	F	F	F
E	S	S	P	S	S	P	P	S	F
F	S	S	F	S	F	F	F	F	F
Task Success Rate	83%	50%	41%	100%	66%	25%	58%	33%	16%
Success Rate	53%								

### How the score was calculated:

We observed 54 attempts to perform the tasks. Of those attempts, 27 were successful and 3 were partially successful. For this particular test, we gave each partial success half a point. Successful attempts are 1 point and failed attempts are 0 points. ( $28.5 / 54 = 53\%$ )

### Detailed findings on Task Completion Success Rate:

The first task was relatively easy and 5 out of 6 participants were able to complete the task. Wifi is a widely used feature and most users are familiar with its configuration and icon. One participant failed due to a system bug: the wifi icon disappears from the status bar after it is disabled, the participant was unable to turn it back on even though an alternative solution existed.

The second task had a 50% success rate. 3 participants failed due to the above bug and they had trouble finding the wifi settings from the setting menu. Some of them tried to use the search function to find it, but the search returned nothing.

The third task had a 41% success rate. Only two participants passed this task, the rest had trouble finding the calculator app since it is not displayed on the desktop. They tried to find the application install list, but there is no traditional program list on the "start" menu. The search function returns the dash calculator add-on, which is not a traditional calculator application. They also do not know how to pin an application to the taskbar. There is no "pin to taskbar" option when you right click on an application. The pinning indicator is also not very noticeable when the icon is placed on the taskbar. Some participants knew to drag the icon onto the taskbar, but they failed to find the correct area to place them, thus their actions yielded no results.

The fourth task was a surprisingly easy one for the participants. All the participants passed this task but some took a long time to locate the saved file, since they did not pay attention to the save location and most of them expected to find it on desktop. LibreOffice Word has a very similar design to Microsoft Word, this explains why all participants were able to complete the task.

The fifth task had a 66% success rate. We found this to be relatively high since the findings from User Research suggested our target users do not go into the settings menu often. Two participants failed the task because they could not locate the specified settings, the rest found the settings either through search or digging through the settings panel. All of them were able to find and download an image online with ease.

The sixth task was the most difficult operation we included in this test, and it has a 25% success rate. Only one participant passed the task after attempting it multiple times. Five participants were unable to find the official chrome application link online. And they failed to recognize that there is an App Store style application on the taskbar, which has the option to install the app with one click. Three participants failed to install the downloaded chrome package since the linux system requires that they install from the command line interface, and there is no executable file to install automatically. All of them tried looking for default settings in the settings panel, but the settings panel does not have a direct link to the default settings page.

The seventh task had a 58% success rate. Two participants were not able to find the default email application since there is no icon for email displayed on the desktop. It can be easily found using the search function. Most participants chose to open their email through the web browser instinctively, such as Gmail, instead of searching for the local default email application.

The eighth task had a 33% success rate. The result was very surprising since the findings from User Research suggested our target users usually organize all their files on the desktop. Four participants sorted the file by manually placing the files using the touchpad. They missed the “sort by name” option when you right click on the desktop.

The ninth task was one of the easiest tasks for this test and had the lowest success rate at 16%. This was extremely surprising for the team since five participants did not know how to use the snap to edge function to split the view. They all tried to right click on the screen, but there was no option there.

Overall, the test had a 53% success rate, it was a relatively a low score considering the overall difficulty was low and the tasks are essential daily tasks for our target users. On the bright side, this was the first experience, except for one, using the Ubuntu operating system for our participants, so the low completion rate was not unexpected given the unfamiliarity between Ubuntu and the mainstream operating systems. Most of our User Research participants expressed that they can complete their daily tasks on their preferred operating systems confidently. We also made some generalizations on our participants behavior:

- Windows users tend to use graphical user interface options and elements to complete their tasks.
- Mac users tend to try the search function first to complete their tasks.
- Most participants did not use the software center and did not know of its existence.
- None knew how to install a downloaded Ubuntu software package.
- All participants tend to search on google for web applications or solutions.
- Some participants wished the downloaded items were displayed automatically after the download completes.
- All participants complained that the default settings are hard to find.

## System Usability Scale (SUS)

### Scale Question:

1. I think that I would like to use this system frequently.
2. I found the system unnecessarily complex.
3. I thought the system was easy to use.
4. I think that I would need the support of a technical person to be able to use this system.
5. I found the various functions in this system were well integrated.
6. I thought there was too much inconsistency in this system.
7. I would imagine that most people would learn to use this system very quickly.
8. I found the system very cumbersome to use.
9. I felt very confident using the system.
10. I needed to learn a lot of things before I could get going with this system.

### SUS Table

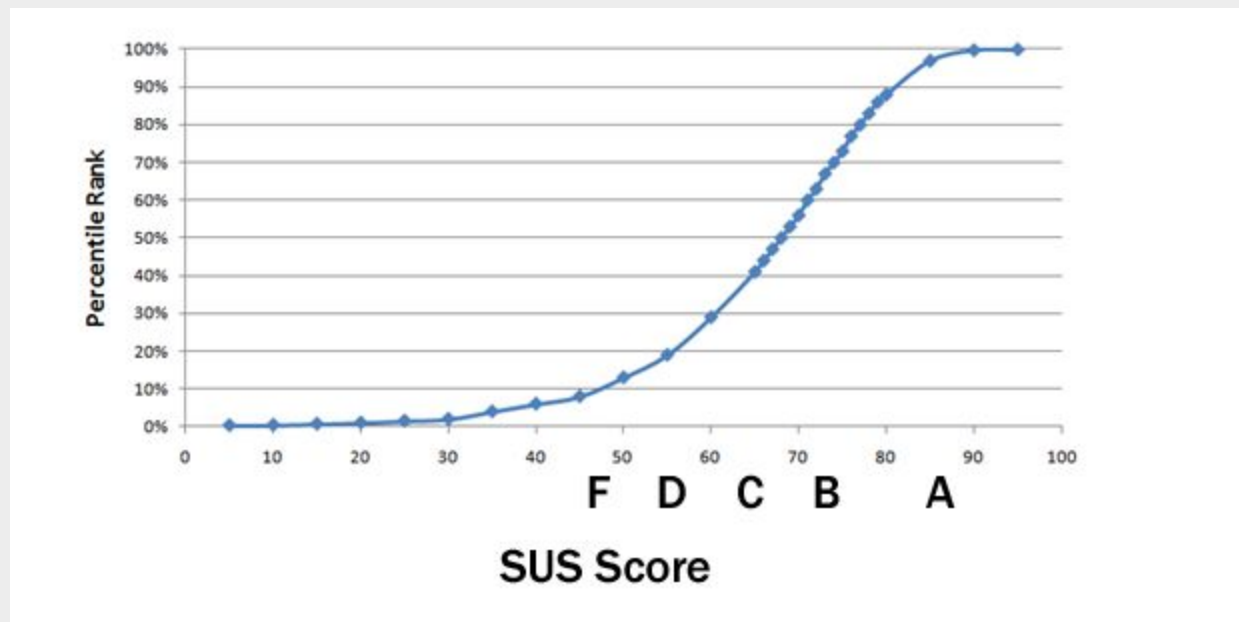
Legends: 5: **Strongly Agree**; 4: **Agree**; 3: **Neutral**; 2: **Disagree**; 1: **Strongly Disagree**

User/ Question	A	B	C	D	E	F
1	3	3	3	1	3	1
2	1	4	1	5	2	4
3	4	2	2	1	4	2
4	3	3	3	5	2	5
5	4	2	5	2	4	2
6	1	5	2	5	1	2
7	2	1	5	2	4	2
8	2	5	5	5	1	2
9	3	1	4	2	3	1
10	3	4	2	5	2	4
Total Score	26	8	26	3	24	11
SUS Score	65	20	65	7.5	60	27.5

Grade	C	F	C	F	C	F
Mean SUS Score	41	Mean Grade	F			

### How the score and grade were calculated:

This score is calculated as follow, first sum the score contributions from each item. Each item's score contribution will range from 0 to 4. For items 1,3,5,7,and 9 the score contribution is the scale position minus 1. For items 2,4,6,8 and 10, the contribution is 5 minus the scale position. Multiply the sum of the scores by 2.5 to obtain the overall value of SU. SUS scores have a range of 0 to 100.

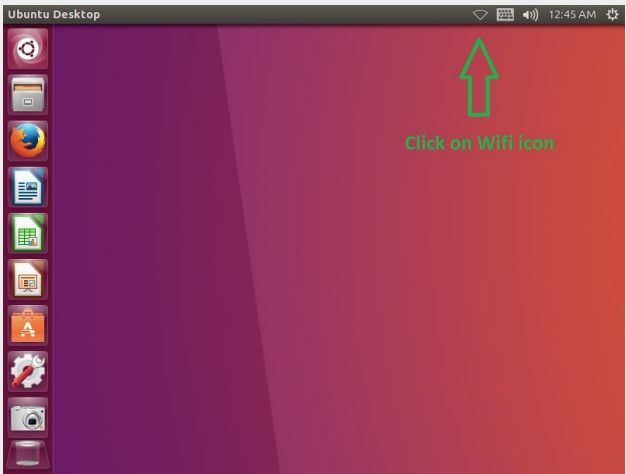
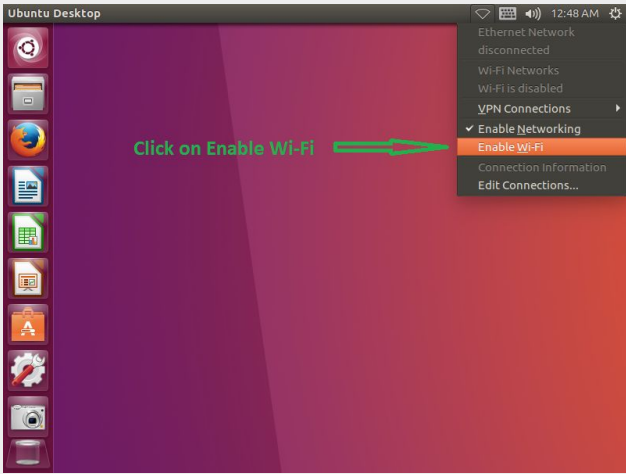
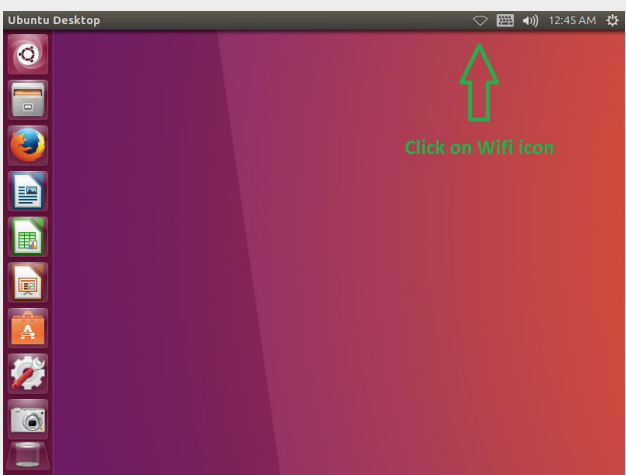


**The system usability scale grade summary:** Overall, the usability test had a mean SUS score of 41 and a Fail grade. Individually, three participants gave it the C grade and three participants gave it the F grade. The highest score is 65 and the lowest is 7.5. The SUS score shows that most participants had difficulty using the Ubuntu operating system and are not confident in their ability to complete the tasks. They found the system marginally inconsistent and intuitive to use. All participants showed little interest using the operating system long term.

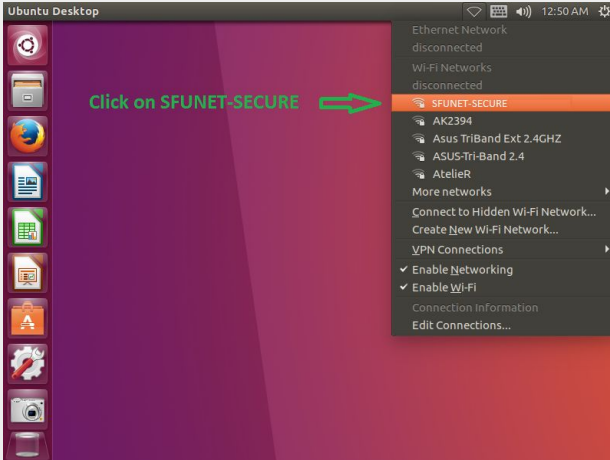
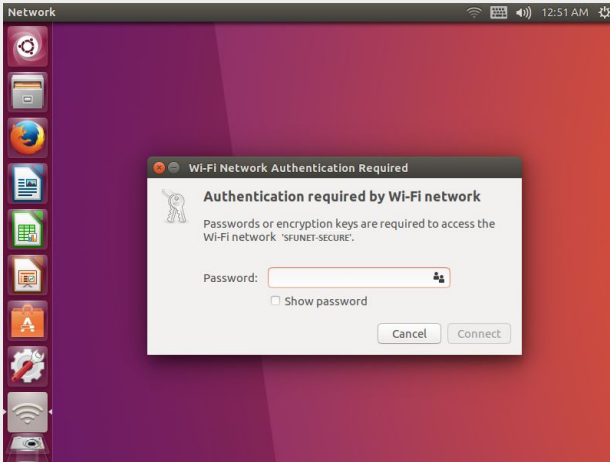
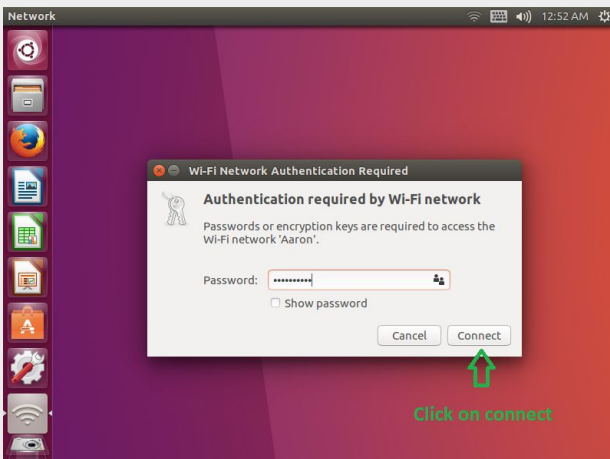
## Usability Benchmarking Tasks

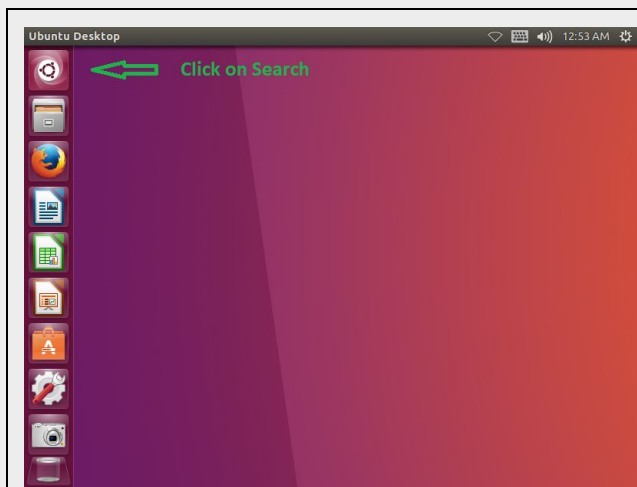
1. Turn on wifi
2. Join network
  - a. Select SFUNET-SECURE
  - b. Input username and password
  - c. Click join
3. Bring up calculator and pin on taskbar
  - a. Click search function
  - b. Search calculator
  - c. Right click on icon in taskbar
  - d. Pin to taskbar
4. Open Word document, save, close, find, open, and edit
  - a. Open Libre Office
  - b. Type one sentence
  - c. Save as in a folder not desktop
  - d. Close the file
  - e. Find the file
  - f. Open the file and edit it
5. Change settings
  - a. Change mouse speed
    - i. Go to system settings
    - ii. Click mouse and touchpad
    - iii. Set speed
  - b. Change wallpaper
    - i. Open Firefox browser
    - ii. Go to Google
  - iii. Search for image
  - iv. Save image to computer
  - v. Open system settings
  - vi. Click on Appearance
  - vii. Click + button on the right and select photo
  - viii. Click open
  - ix. Click on image to change
6. Change default browser app
  - a. Open Firefox browser
  - b. Search Chromium Ubuntu download
  - c. Download Chromium
  - d. Open system settings
  - e. Click Default Applications
  - f. Select web dropdown
  - g. Choose Chrome
7. Email Setup
  - a. Click email icon at the top
8. Sort icons on desktop
  - a. Right click
  - b. Click Align Desktop Icons
9. Place views into split screen
  - a. Open two browser windows
  - b. Snap each screen to the left or right

# Usability Benchmarking Task Index

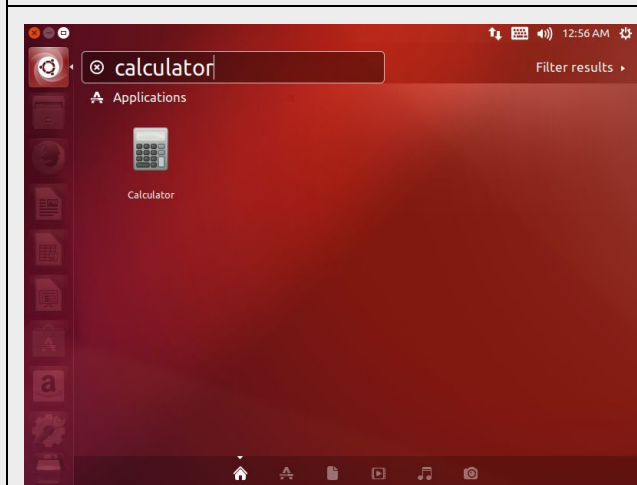
1. Turn on wifi	
	a. Click on Wifi icon
	b. Click "Enable Wi-Fi"
2. Join network	
	a. Click on Wifi icon



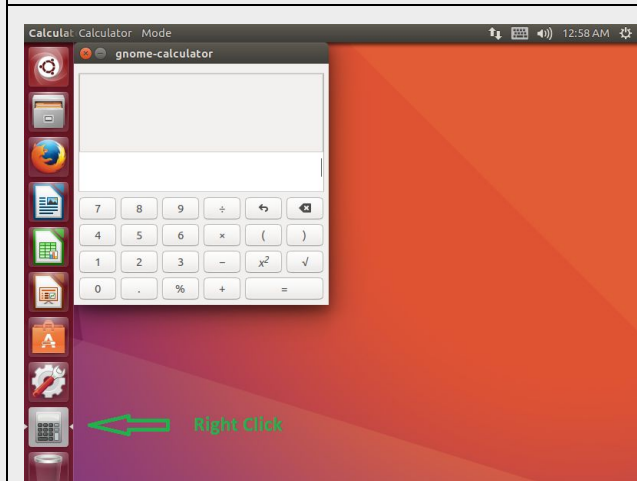
 <p>Click on SFUNET-SECURE →</p>	<p>b. Select SFUNET-SECURE</p>
 <p>Authentication required by Wi-Fi network</p> <p>Password: <input type="password"/></p> <p><input type="checkbox"/> Show password</p> <p>Cancel Connect</p>	<p>c. Input password</p>
 <p>Authentication required by Wi-Fi network</p> <p>Password: <input type="password"/></p> <p><input type="checkbox"/> Show password</p> <p>Cancel Connect</p> <p>Click on connect ↑</p>	<p>d. Click Connect</p>
<p>3. Bring up calculator and pin on taskbar</p>	



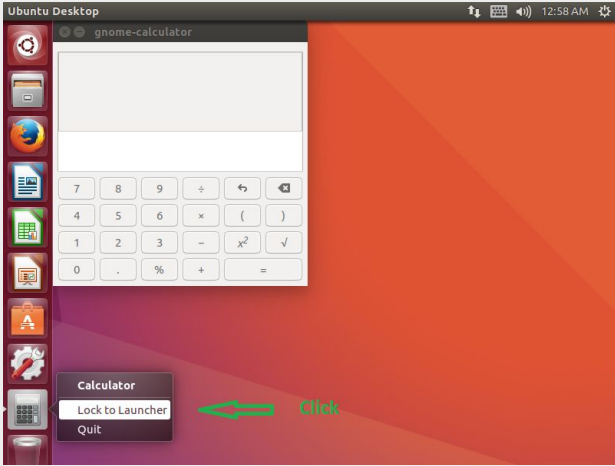
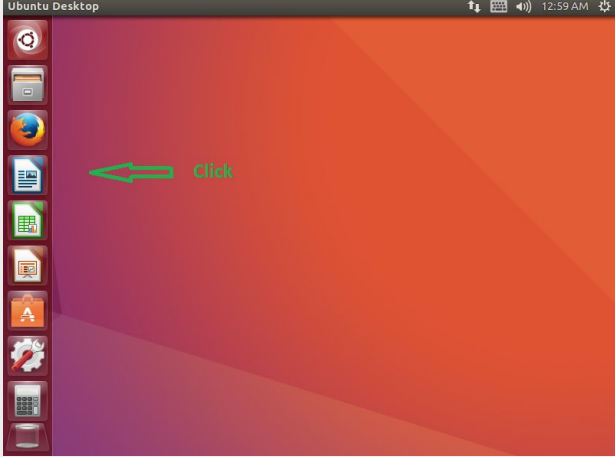
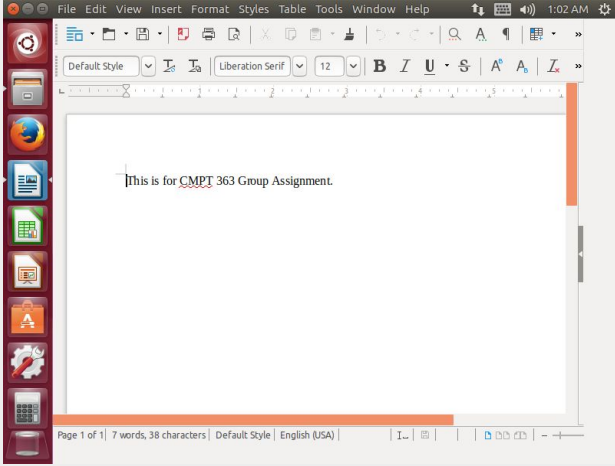
a. Click search function

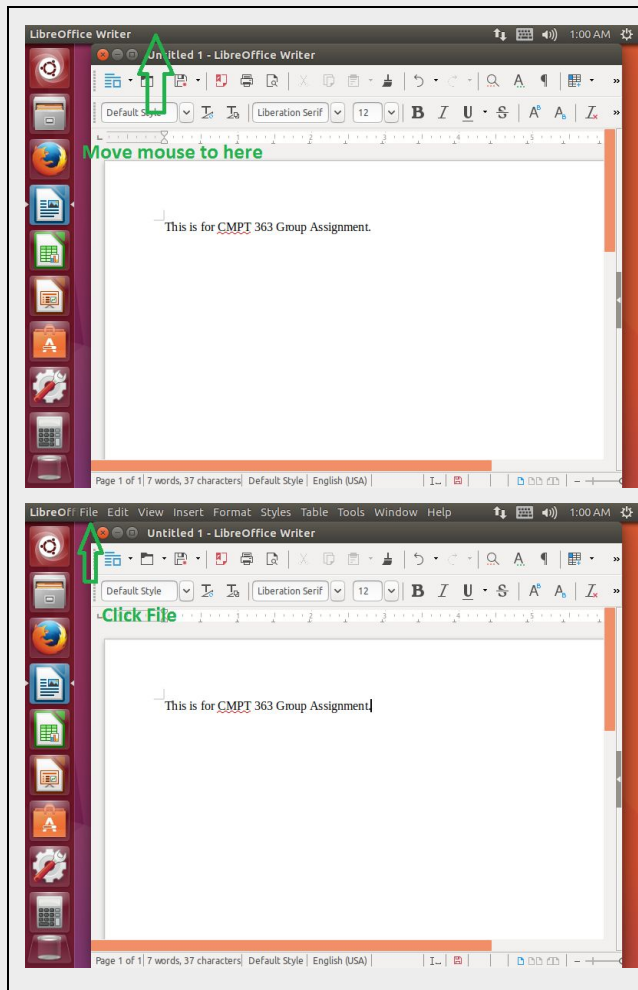


b. Search calculator

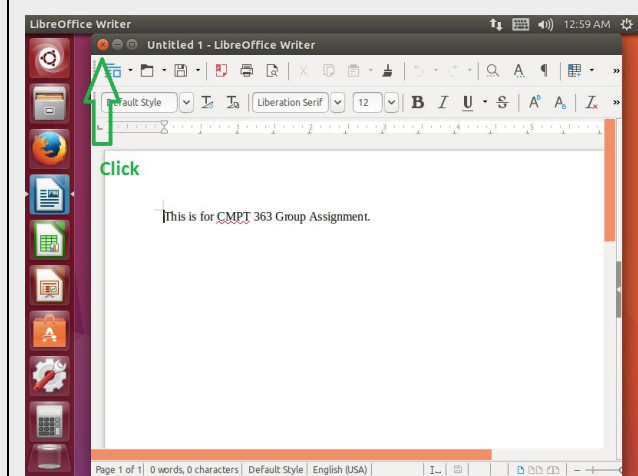
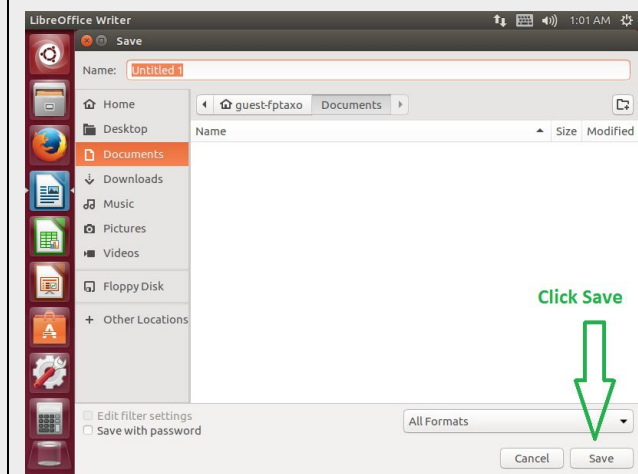
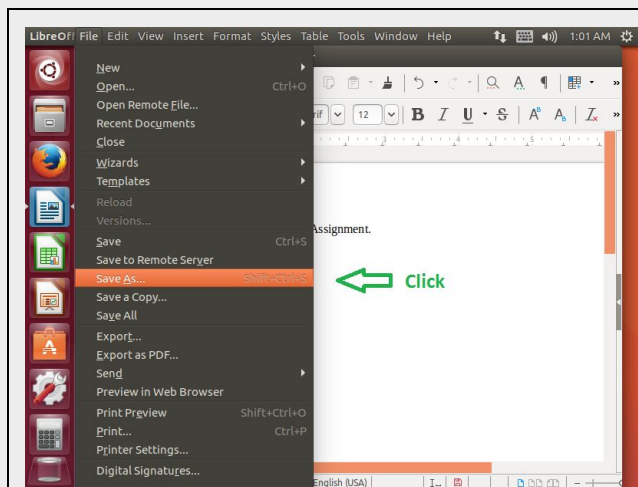


c. Right click on icon in taskbar

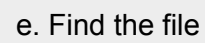
	<p>d. Pin to taskbar</p>
<p>4. Open Word document, save, close, find, open, and edit</p>	
	<p>a. Open Libre Office</p>
	<p>b. Type one sentence</p>

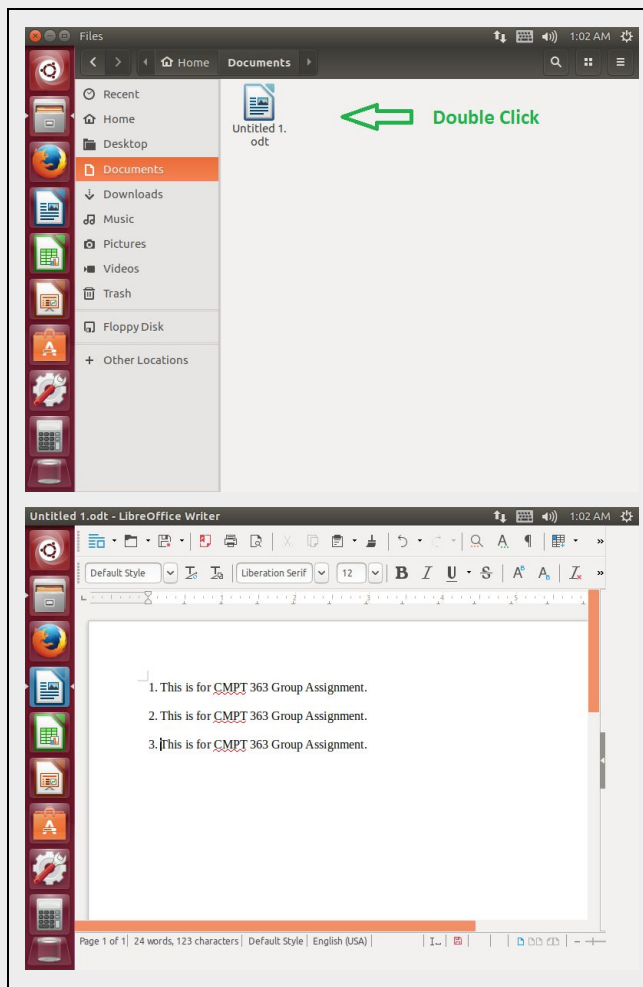


c. Save as in a folder not desktop



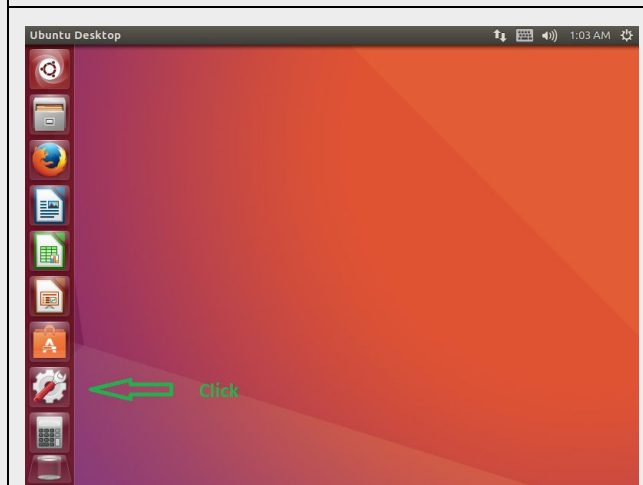
d. Close the file



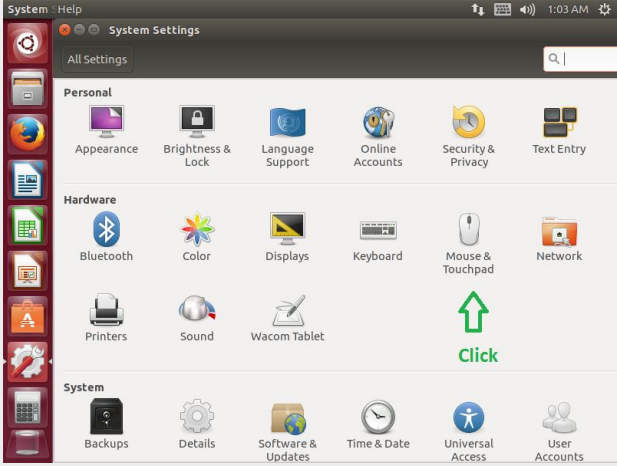
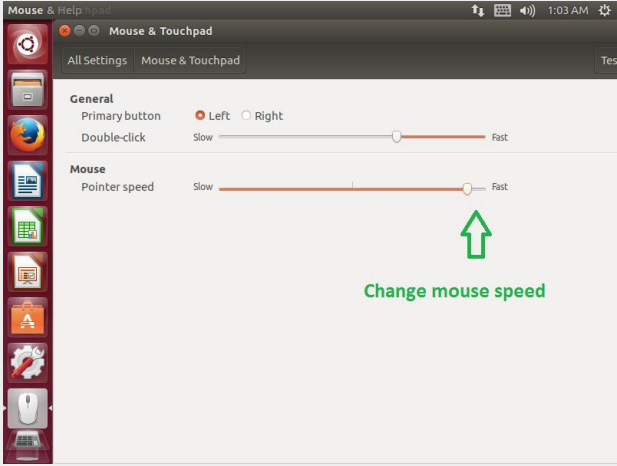
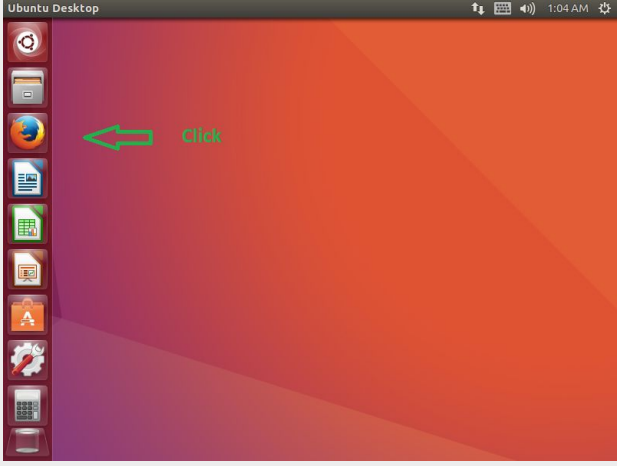


f. Open the file and edit it

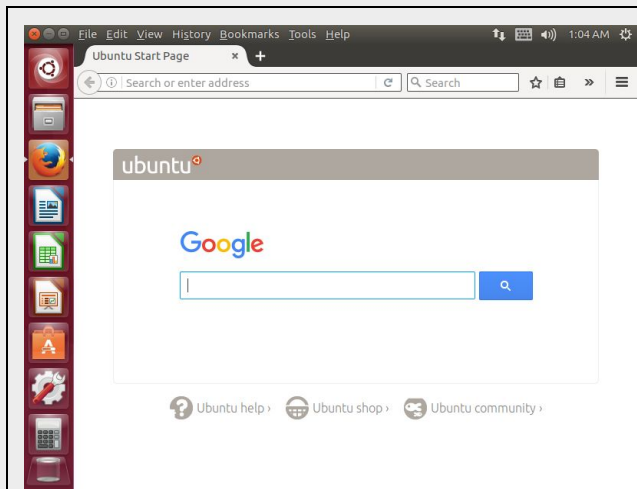
### 5(a). Change settings - Change mouse speed



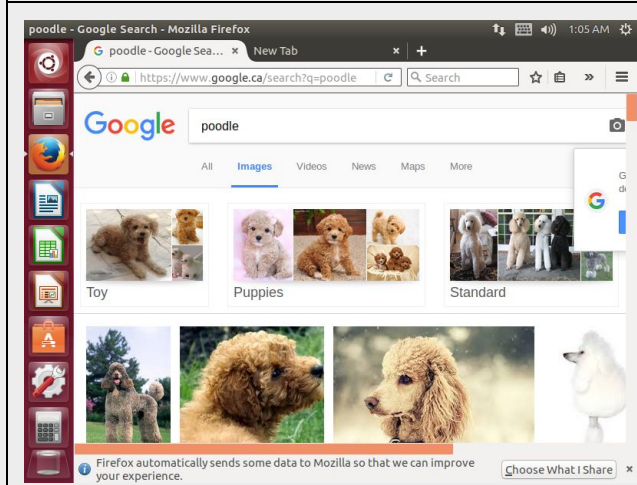
a. Go to system settings

	<p>b. Click mouse and touchpad</p>
	<p>c. Set speed</p>
<p>5(b). Change settings - Change wallpaper</p>	
	<p>a. Open Firefox browser</p>

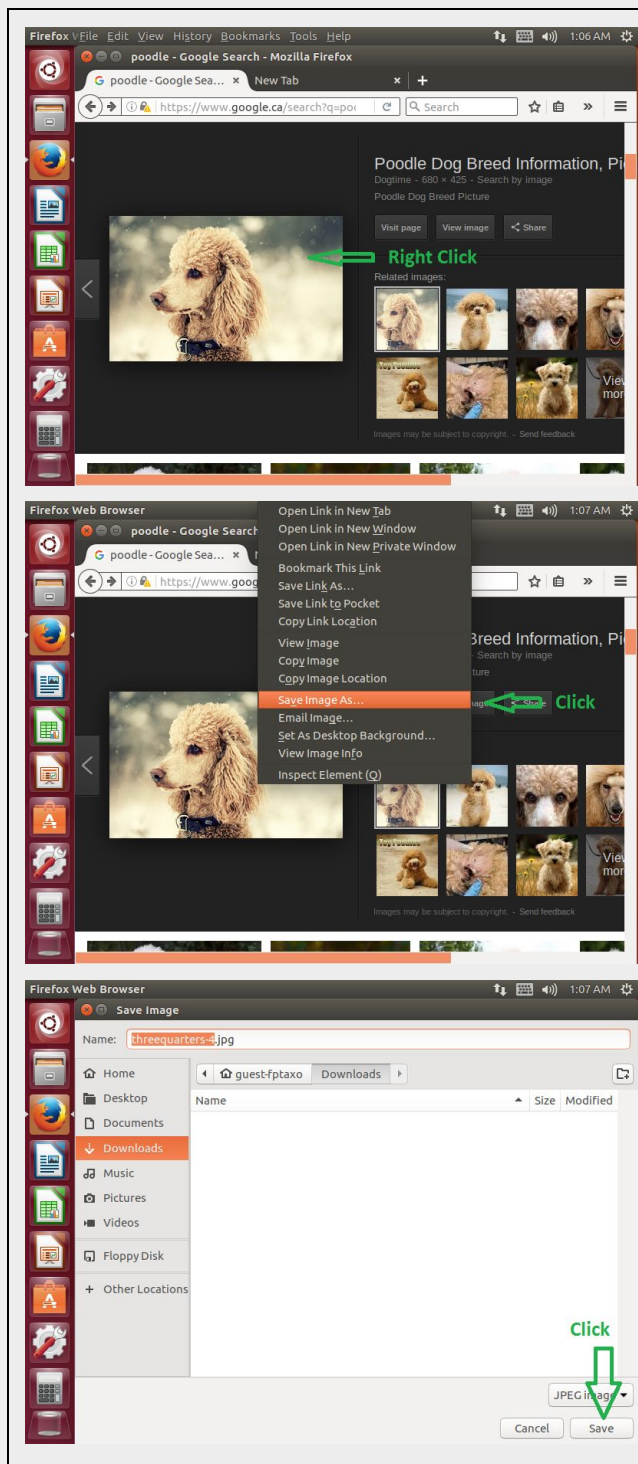




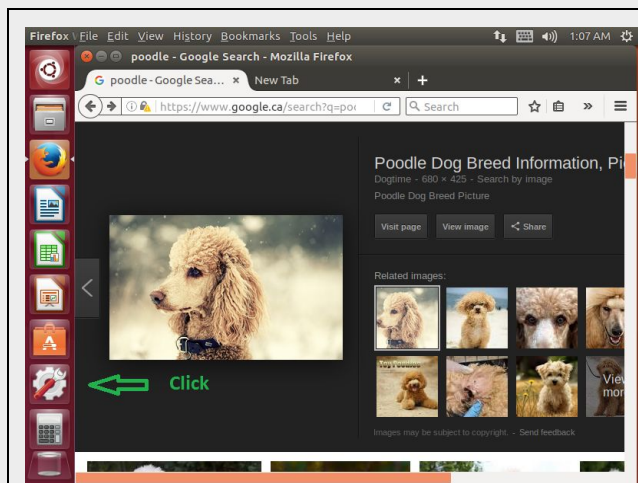
b. Go to Google



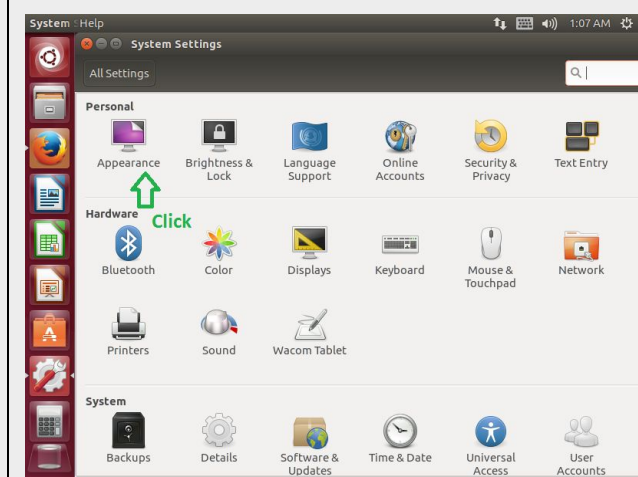
c. Search for image



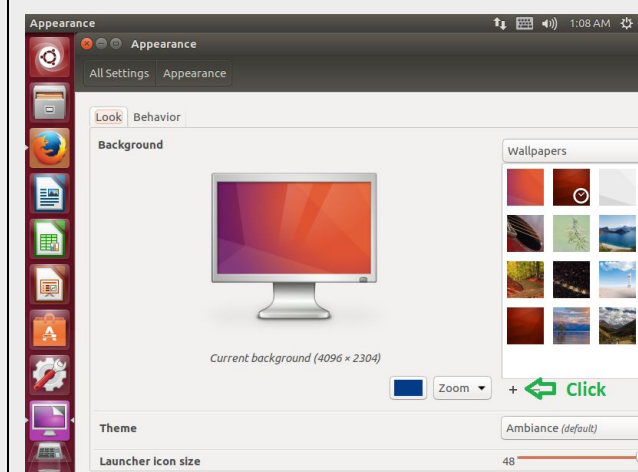
d. Save image to computer



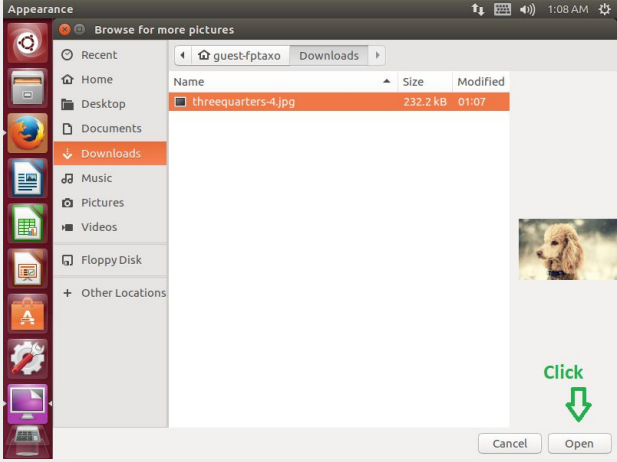
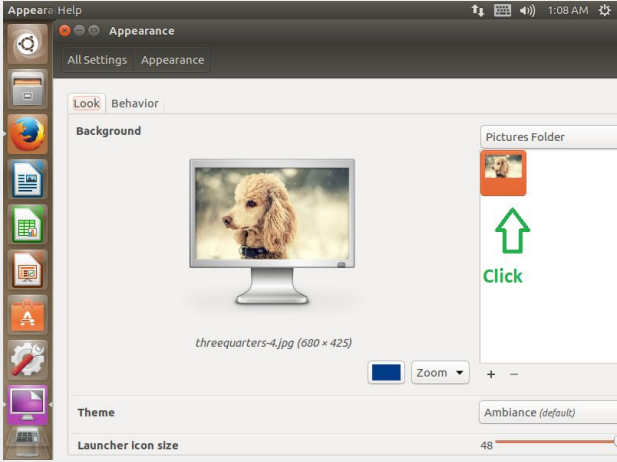
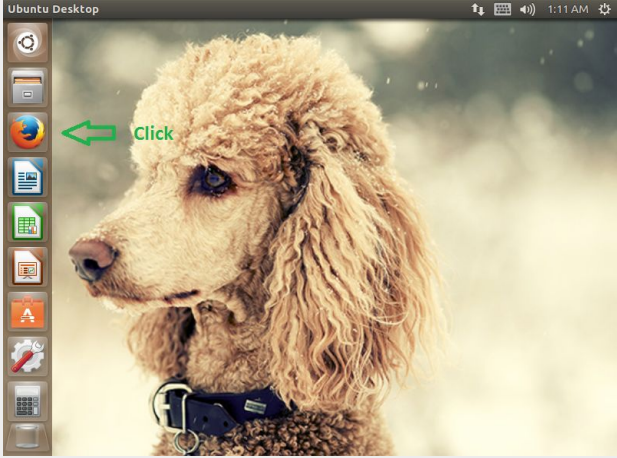
e. Open system settings



f. Click on Appearance



g. Click + button on the right and select photo

	<p>h. Click open</p>
	<p>I. Click on image to change</p>
<p>6. Change default browser app</p>	
	<p>a. Open Firefox browser</p>

Ubuntu Start Page - Mozilla Firefox

Ubuntu Start Page

Search or enter address

Search

ubuntu

Google

chromium ubuntu download

Ubuntu help

Ubuntu shop

Ubuntu community

chromium ubuntu download - Google Search - Mozilla Firefox

chromium ubuntu d...

https://www.google.ca/search?q=chromi

Search

chromium ubuntu download

All Videos News Images Shopping More Search tools

About 6,740,000 results (0.40 seconds)

Chromium browser — Ubuntu Apps Directory

https://apps.ubuntu.com > All Apps > Internet > Chromium browser

Email a link to download ... Chromium is an open-source browser project that aims to build a safer, faster, and ... This package contains the Chromium browser ...

Download Chromium - The Chromium Projects

https://www.chromium.org/getting-involved/download-chromium

You can test Chrome builds or Chromium builds. Chrome builds have the most infrastructure for analyzing crashes and reporting bugs. They also auto-update as ...

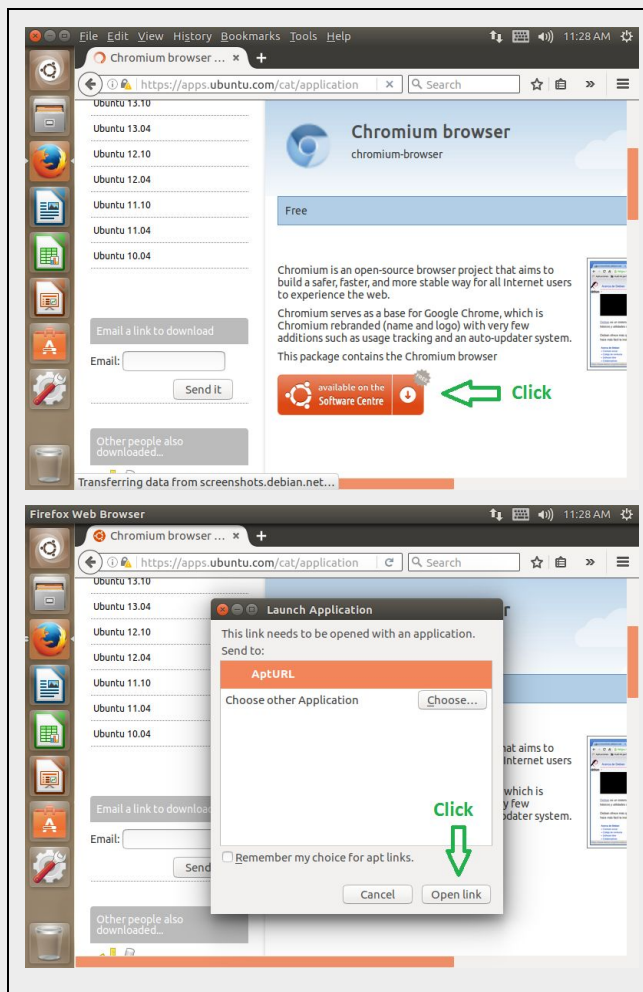
google chrome - How to install Chromium Web Browser on U...

askubuntu.com/.../how-to-install-chromium-web-browser-on-ubuntu-15-...

Oct 13, 2015 - I am trying to install Google Chrome or Chromium Web Browser on Ubuntu 15.04. I tried: sudo apt-get update sudo apt-get install ...

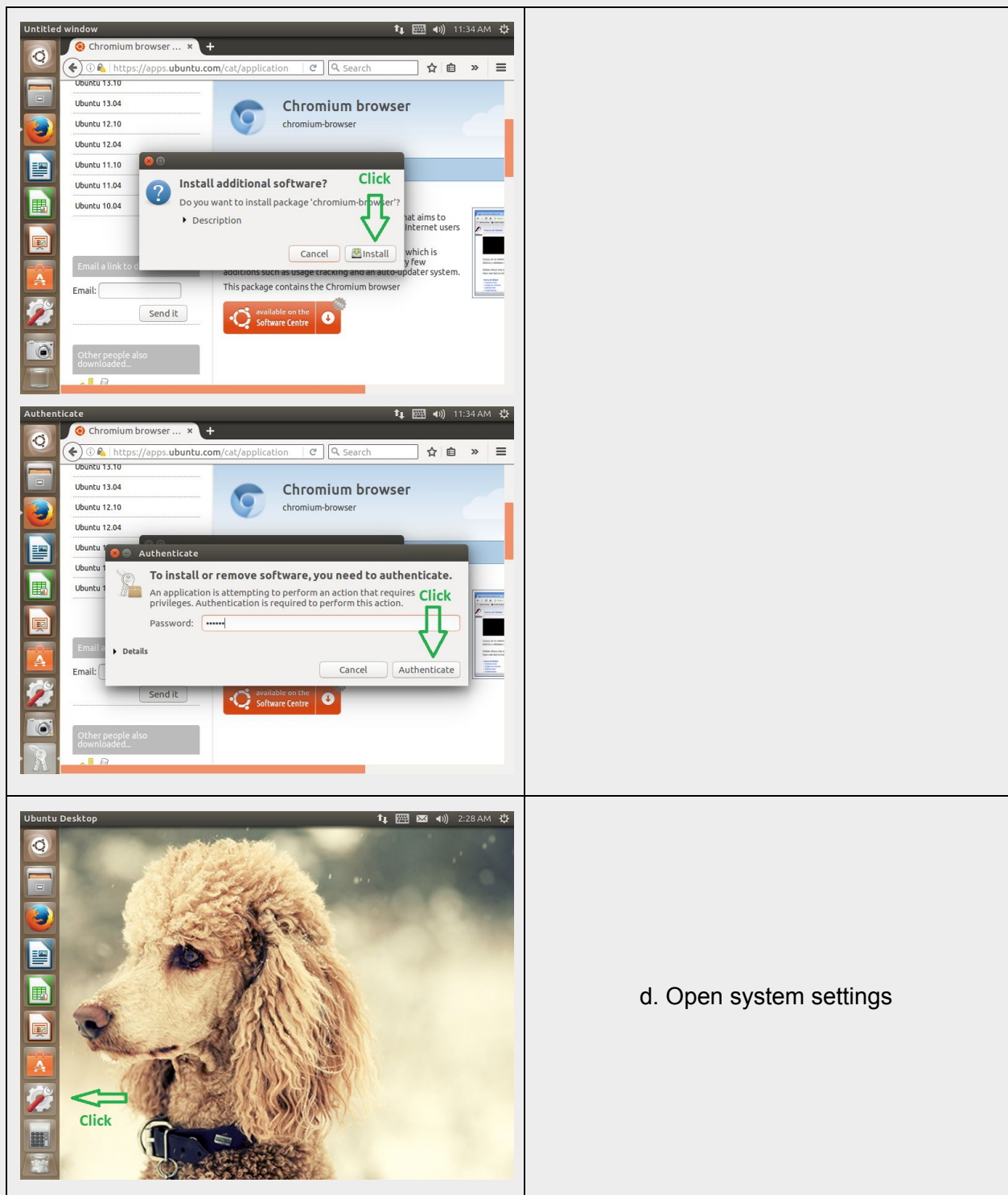
How to install the latest stable version of Chromium? - Ask Ub...

b. Search Chromium Ubuntu download

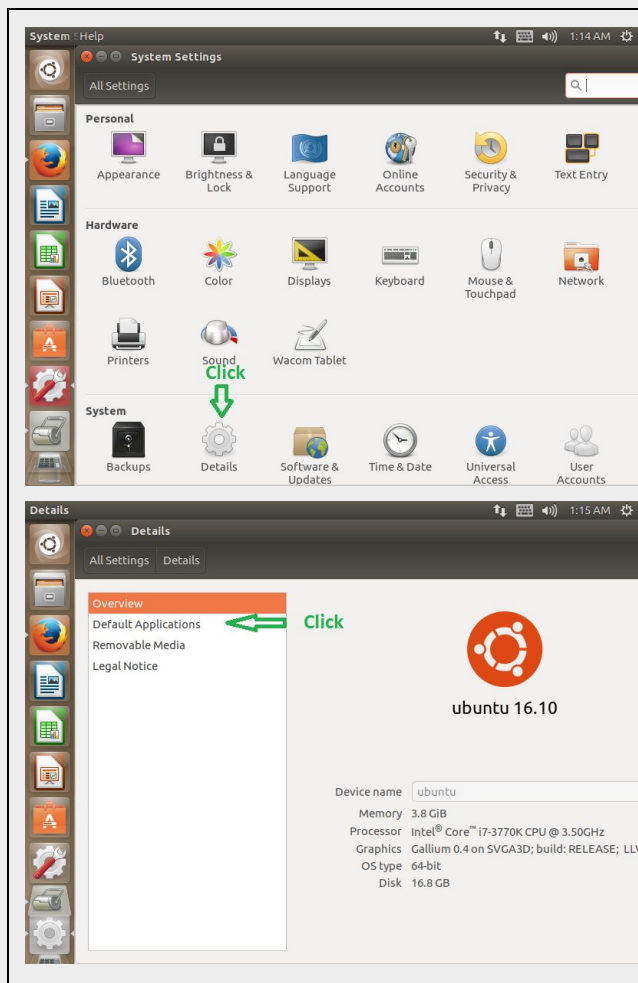


### c. Download Chromium

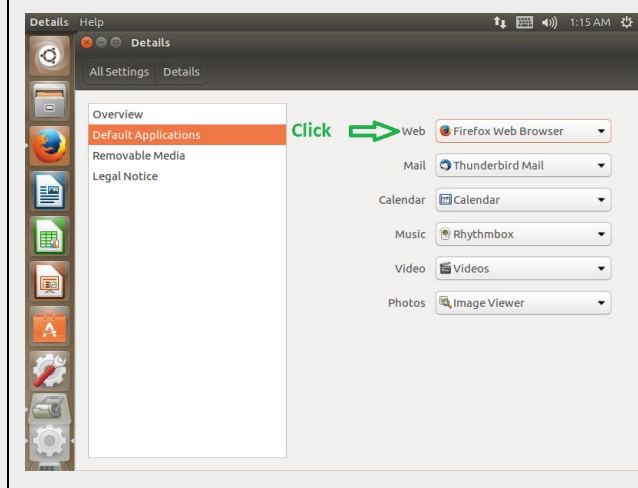




d. Open system settings

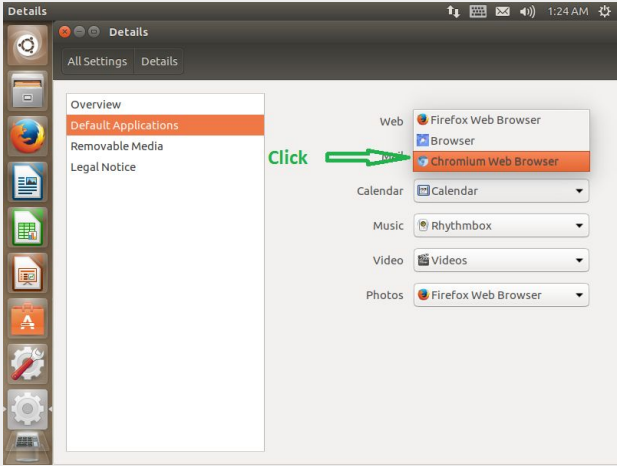


e. Click Default Applications



f. Select web dropdown





Details

All Settings Details

Overview

Default Applications

Removable Media

Legal Notice

Click

Web

- Firefox Web Browser
- Browser
- Chromium Web Browser

Calendar

Calendar

Music

Rhythmbox

Video

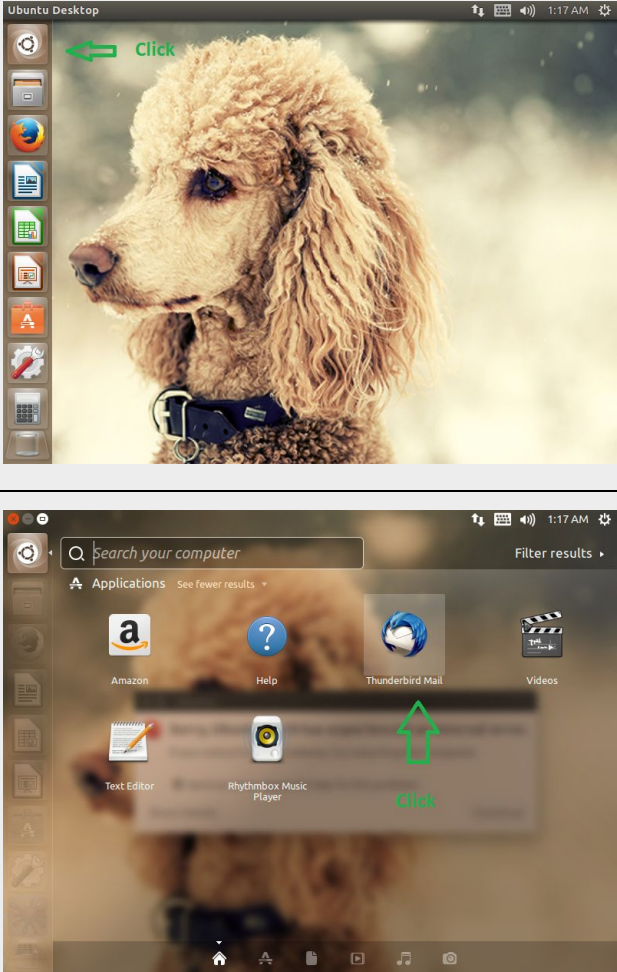
Videos

Photos

Firefox Web Browser

g. Choose Chrome

## 7. Email Setup



Ubuntu Desktop

Click

Search your computer

Filter results

Applications

See fewer results

Amazon

Help

Thunderbird Mail

Videos

Text Editor

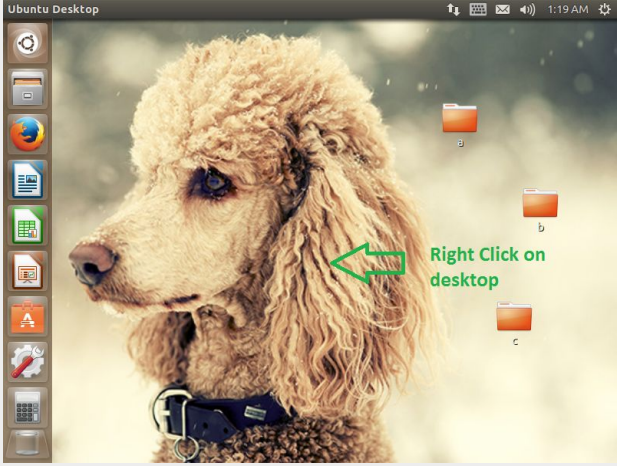
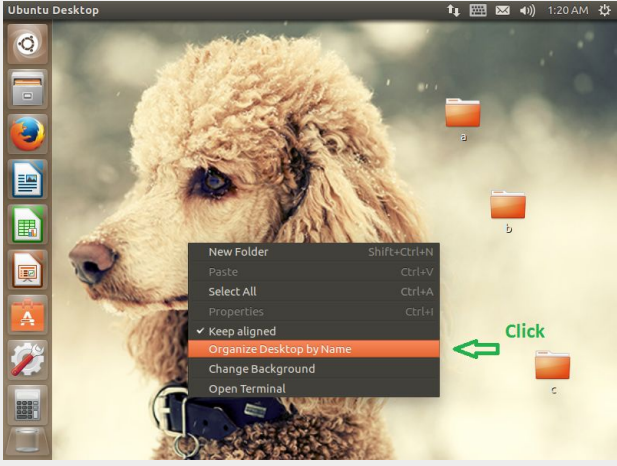
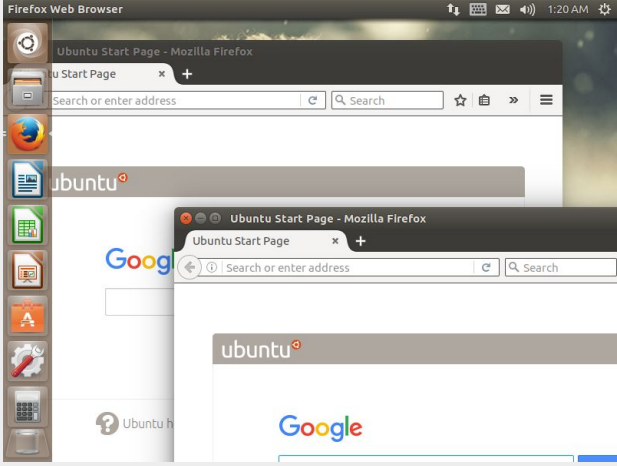
Rhythmbox Music Player

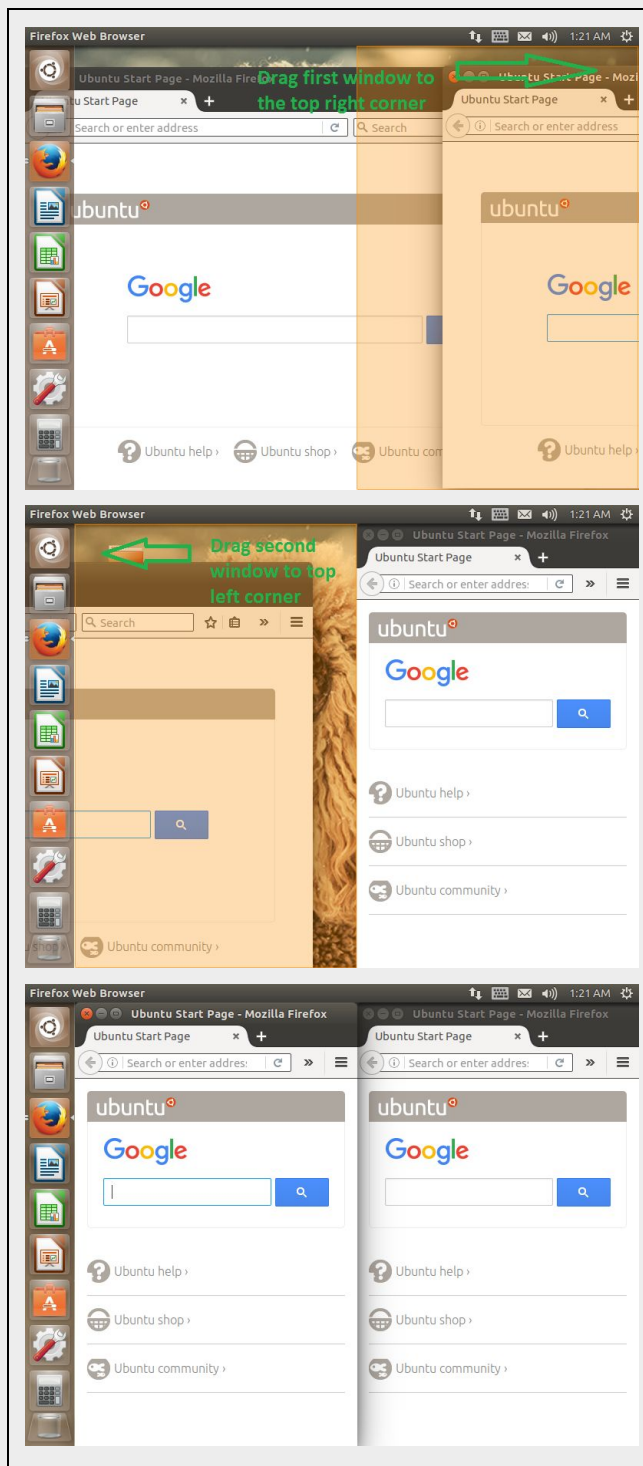
Click

a. Go to search

b. Click email icon

## 8. Sort icons on desktop

	<p>a. Right click</p>
	<p>b. Click Align Desktop Icons</p>
<p>9. Place views into split screen</p>	
	<p>a. Open two browser windows</p>



b. Snap each screen to the left or right

# Appendix

## User Research Interview Participants

1. Participant A
  - a. Tuesday, Oct 25th, 2016
  - b. Blenz Coffee across from Harbour Centre
2. Participant B
  - a. Tuesday, Oct 25th, 2016
  - b. Harbour Centre by the Food Court escalators
3. Participant C
  - a. Tuesday, Oct 25th, 2016
  - b. Harbour Centre Food Court
4. Participant D
  - a. Tuesday, Oct 25, 2016
  - b. Harbour Centre Food Court
5. Participant E
  - a. Tuesday, Oct 25, 2016
  - b. Harbour Centre upper floor by the lounge chairs
6. Participant F
  - a. Tuesday, Oct 25, 2016
  - b. Tim Horton's Harbour Centre
7. Participant G
  - a. Tuesday, Oct 25, 2016
  - b. Tim Horton's Harbour Centre
8. Participant H
  - a. Tuesday Oct 25, 2016
  - b. Tim Horton's Harbour Centre
9. Participant I
  - a. Tuesday, Oct 25, 2016
  - b. Tim Horton's Harbour Centre

## Usability Testing Participants

1. Participant A
  - a. Wednesday, Oct 26, 2016
  - b. Tim Horton's SFU Burnaby
2. Participant B
  - a. Wednesday, Oct 26, 2016
  - b. Tim Horton's SFU Burnaby
3. Participant C
  - a. Wednesday, Oct 26, 2016
  - b. WMC Lower Floor SFU Burnaby
4. Participant D

- a. Wednesday, Oct 26, 2016
  - b. WMC Lower Floor SFU Burnaby
5. Participant E
  - a. Wednesday, Oct 26, 2016
  - b. WMC Starbucks SFU Burnaby
6. Participant F
  - a. Wednesday, Oct 26, 2016
  - b. WMC Starbucks SFU Burnaby

## Background Research

- <http://usabilitygeek.com/how-to-use-the-system-usability-scale-sus-to-evaluate-the-usability-of-your-website/>
- <http://www.measuringu.com/sus.php>
- <https://www.smashingmagazine.com/2012/01/ux-research-plan-stakeholders-love/>
- <https://possiblemobile.com/2016/04/personas-workshop/>