Laboratory 1

Introduction to the Labs

Objective

- Learn the skills you need to work with this lab manual.

References

Software needed:

1) A web browser (Internet Explorer or Netscape)
2) Applet from the CD-ROM:
   a) Introduction applet
3) (*Optional*) A word-processing program, such as Microsoft Word
4) (*Optional*) A spreadsheet program, such as Microsoft Excel or Microsoft Works Spreadsheet

Background

Everything you need to learn is explained in the Activity section below.

Activity

In these labs, you will sometimes be asked to take a screenshot of what appears on your computer screen. A screenshot is a "snapshot" of your computer's screen. This section discusses how to do this on a wide variety of computer systems.

In order to make them usable on as many platforms as possible, all of the applets in this lab manual were written using Java 1. While a later version of Java, version 1.4, allows printing directly from a Java program, many sites have not yet installed it, and it does not work with all browsers. That's why you'll need to rely on taking screenshots in order to record your work with the applets. Once you've taken a screenshot, it can be copied into a word-processing program and scaled, or it can be printed as is.

There is much variety in the way screenshots work on different platforms. For two platforms (Windows and Macintosh), the operating system offers a convenient way to take a picture of the screen. Other systems (Linux and Unix) require programs to take screenshots. Fortunately, these programs are widespread and free, so you should be able to take a screenshot without installing any software.

Most of the labs in this manual are designed to work universally on the vast majority of platforms without needing special instructions tied to a specific operating system. However, because each operating system has its own way of handling screenshots, specific instructions are given for the Windows, Macintosh, Linux, and Unix systems. You should jump to the section that covers your operating system, read the material, and then move on to the Exercise section for this lab.

Windows

Windows is a generic term that signifies a number of different operating systems from Microsoft. They include Windows 95, Windows 98, Windows ME, Windows NT, Windows 2000, and Windows XP.

In all versions of Windows, you can take a screenshot by pressing a button on the keyboard labeled *Print Screen*. It is often in the top row of the keyboard, to the right of the function keys. Sometimes the label *SysRq* is underneath *Print Screen*, signifying that taking a screenshot requires holding down the *Shift* key while pressing this key.

To take a screenshot, hold down the *Shift* key and press *Print Screen*. It will appear as though nothing happened, but the computer did make a picture of your entire screen and saved it in the system clipboard. To view this picture or print it out, start a program that edits pictures. Every Windows installation comes with Microsoft Paint, which works just fine for our purposes. Start Paint from the *Start* button on the task bar or create a new Paint document (often called a "bitmap image"). Then click on *Edit* in the menu bar and select *Paste*. The image will appear in your window, and Paint will resize the document to hold the entire image.

Macintosh

Macintosh refers to a line of computers manufactured by Apple Computer, including the imac, the ibook, the Powerbooks, and the G4 towers. These directions work on all flavors of Mac OS, from System 6 to MacOS X.

To take a screenshot on a Macintosh, hold down the *Shift* and *Apple* keys, and press *3* or *4*. *Shift-Apple-3* causes the whole screen to be "photographed," while *Shift-Apple-4* causes a set of crosshairs to appear, allowing you to select the part of the screen you want to appear in the image.

Once you've taken your screenshot, a new file appears on your hard drive with the name Picture1, Picture2, etc. To view the file, double-click on it, which usually brings up SimpleText, a bare-bones editing program. You can print your screenshot from SimpleText.

LINUX

Linux is the name of the Unix-like operating system created by Linus Torvalds in 1991. It has since gained a solid following and is used by a number of companies, schools, and individuals. Linux is most often encountered as a *distribution* under a particular name, including Red Hat, Mandrake, SUSE, Lycoris, Lindows, and others. These distributions contain the complete Linux operating system, system and programming tools, some applications, and other tools for configuring hard disks and installing software.

Almost every Linux distribution contains a program called **gimp**, which is an acronym for GNU Image Manipulation Program. (GNU is an acronym for a set of programming tools that predates Unix but that is now commonly distributed with Linux. GNU stands for GNU's Not Unix and is a recursive acronym, because on expansion the letters GNU endlessly repeat.)

Linux may start up in command line mode, rather than in graphical mode. You cannot use most web browsers in command line mode, except for Lynx (a very old, text-only browser). If your Linux computer is in command line mode, start X Windows to go into graphical mode. Typically, you would type the command

```
$ startx
```

(the dollar sign is the prompt, not part of the command).

To take a screenshot with gimp, first start gimp. Either find its executable and double-click on it, or type the command `gimp` from a shell. These directions apply to Version 1.2.1 and higher. You can get gimp free from *http://www.gimp.org*.

Gimp will create several small windows. The main one has many buttons on it and a title of "The Gimp." Pull down the *File* menu and select *Acquire*. Then select *Screenshot* from the submenu. You can either take a screenshot of one window or of the whole screen. You can also set a delay, such as five seconds, so that you can put the image you want on the screen by starting the desired program. Once gimp takes the screenshot, it brings up a viewing window. To save the picture, click once inside the image itself to bring up a new menu. Select *File* and *Save As*.

UNIX

Unix refers to a large number of operating systems descended from AT&T's original Unix, including BSD, System V, Solaris, Irix, AUX, AIX, and many, many others.

To use a web browser in Unix (other than the text-oriented Lynx mentioned earlier), you need to start a windowing system. Some vendors such as Sun have their own (SunView), but most also run X Windows. The details of starting the graphical user interface vary, so you should consult your lab instructor.

Once you have a screen you want to take a picture of, start up a program that will take a screenshot. Sometimes these are called snapshots. Look for an *Acquire* menu. Some programs to try are xview and xpaint.

If you are running X Windows on a Unix computer, gimp (the GNU Image Manipulation Program) will work. Gimp was written for the X Windows environment in Unix and was later ported to Linux. You can download it for free and either install it or have the local system administrator install it. Check out gimp's web page at *http://www.gimp.org*.

For details about X Windows and its desktop environments, go to *http://www.rahul.net/kenton/xsites.html*.

Exercise 1

Name _____ Date _____

Section _____

1) Start the "Introduction" applet (from the CD-Rom). This simple applet contains some fields for you to fill in, including *Name*, *Major*, etc. There's also a pull-down menu from which to choose your class (*Freshman*, *Sophomore*, etc.).

2) Fill in the fields with the appropriate information.

3) Once you've finished filling in the information, take a screenshot of the completed applet.

4) (*Optional*) Paste the screenshot into a word-processing document. For example, if you're using Microsoft Word in Windows, your screenshot is stored on your machine's clipboard after you take it, so you can simply launch Word and paste the image into the Word document. If you are using Word on a Mac, take your screenshot, launch Word, go to the *Insert* menu, and choose *Picture From File*... Browse your way to the picture and select it.

   Most word processors that can handle images will let you re-size them, permitting you to put several screenshots on a single page. This will be handy for future labs that require multiple screenshots. Consult your program's Help section or check with your lab instructor for instructions if you wish to do this.

5) Print your screenshot.

Deliverables

Turn in your printed screenshot.