Getting Started on BGUnix

This document discusses how to get started using BGUnix, the campus UNIX instructional system.

This document should be used by faculty, staff, and students at Bowling Green State University who have a BGNET account and want to use the BGUnix system.

This document contains
- information about obtaining a BGUnix account
- information about the basic commands for BGUnix from the command line prompt
- information about working with directories and files
- instructions for accessing online help
- an introduction to UNIX Editors
- information about redirecting standard input and output and using pipes
- additional help

The conventions used in this document are
- Δ   =   space
- ®   =   **RETURN**
- +   =   key combination
- $ =   UNIX command-level prompt
- :   =   vi last-line mode prompt
- **bold**   =   commands
- **BOLDCAPS**   =   specific key
- **Bold Title Case** =   specific names of, boxes, buttons, files, folders, menus, and screens
- *italics*   =   client-supplied information

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1.0 Introduction

BGUnix, a Sun Microsystems SunFire v440 running the Solaris 10 operating system, is the campus instructional UNIX system. With an account, you are given login access to the system. The default shell is a bash shell. The default prompt is a combination of the version of bash plus the $ (dollar sign), e.g.-bash-3.00$.   BGUnix is used for general-purpose needs as well as high-demand computation.

You can access BGUnix directly with an application that supports one of these protocols SSH (version 2), SFTP and SCP connection only. An X windows (X11) is also available but will be restricted to connections tunneled through SSH for improved security. The telnet and FTP protocols, supported on older Unix systems, are no longer supported due to their lack of encryption and other security concerns. With SSH (version 2), SFTP or SCP, you use the network connection on your microcomputer with an application that supports one of those protocols to connect to BGUnix so you can enter commands in a terminal window. Suggested applications for the PC are PuTTY for SSH and WinSCP as an SFTP or SCP client.   Mac OS X users have the built-in terminal that supports SSH and SCP from the command line. Fetch supports SFTP/SCP from a graphical client.

This document describes some of the most basic commands used in a terminal window.

1.1 Obtaining a BGUnix Account

These are the directions for obtaining an individual account on BGUnix. If you need a class account, a subdirectory for that class will be added to your individual account. You will receive instructions for setting up your class account from your professor.

An individual BGUnix account can be obtained through an automated process on BGSU's web portal. In order to access the portal, you must use your BGNet account username and authentication password.   If you have forgotten your authentication password, please call (419-372-0999) or stop by the Technology Support Center at 110 Hayes Hall for assistance.

If you already have a BGNet account and authentication password, use this process to request a BGUnix account:

1.   Using a current web browser, go to: http://my.bgsu.edu

2. When the authentication login page is displayed, enter your **BGNet Username** and **Authentication Password**. Then click on the **Login** button or press the RETURN or ENTER key.

3. When your portal entry page is displayed, click Student, or Employee and then Add Server Account portlet under 'Account Admin'. Portlets are identified by the orange-colored title bar at the top that includes the module name.

4. When the **BGSU Server Account Registration** page comes up, you will be asked to pick a server account. Select BGUnix and click the **Submit** button.

5. A copy of the **Acceptable Use Policy** for Information Technologies is posted for your review. If you agree to abide by those policies, click on the checkbox after the words 'I Accept' and then click on the **Submit** button. You must agree in order to receive an account.

6. **Important**! When you have read the notice that you have successfully completed the registration process, click the **Done** button to logout of your authentication process.

You will receive an email message when your BGUnix account is available -- approximately 1 hour later.

Your authentication password will automatically become your BGUnix password. You will not be forced to change your password, but you can change it. See Section 1.4, Changing Your Password.

1.2 Logging Onto the BGUnix System

To connect to the BGUnix system, you can:
- Use an application that supports one of these protocols: SSH (version 2), SFTP and SCP. Suggested applications for the PC are PuTTY for SSH and WinSCP as an SFTP or SCP client. Mac OS X users have the built-in terminal that supports SSH and SCP from the command line. Fetch supports SFTP/SCP from a graphical client.

To get a connection to BGUnix, you will provide the hostname bgunix.bgsu.edu

When you see the BGUnix login prompt in your terminal window, use the following instructions to access your account:

1. At the **login** prompt, type your username, and press **ENTER** or **RETURN**.

2. At the **Password** prompt, type your password, and press **ENTER** or **RETURN**.

For security reasons, nothing appears on the screen when you type your password. **Your password is case-sensitive**, so make sure you differentiate between upper- and lower-case letters when you enter your password.

If all of the information you entered is correct, you will see an introductory message if there is one, followed by the command level prompt. The command prompt is the dollar sign ($).

If you made a mistake while logging in, you will see a "Login incorrect" error message, and the system returns to the **login** prompt.

1.3 Logging Off BGUnix

To log off BGUnix, type the following at the command prompt:

$ **exit**   or the following key combination $ [Control]+d

1.4 Changing Your Password

Your password will stay synced with your BGSU Account.

2.0   Using Basic System Commands on BGUnix

There are several basic commands on BGUnix that you can use to get various types of information from ~~the system~~, including the date and time, a list of clients currently on the system, and information about a specific client. The following sections describe some of these basic system commands.

2.1 Checking the Date and Time

To check the current date and time, type the following at the command prompt:

$ **<u>date</u>**®

2.2 Obtaining a List of Clients Currently on the System

To get a list of all of the clients who are currently logged on to the BGUnix system, type the following at the command prompt:

$ **<u>who</u>**®

This command gives you the username, logon terminal, and logon time of each client currently using BGUnix.

2.3 Fingering Another Client

This command allows you to find more information about the specified BGUnix client. To finger a client on your current system, type the following at the command prompt:

$ **finger**Δ*username*®

Replace *username* with the username of the client you want to find. If that client has an account on BGUnix, the computer gives you his or her username, real name, home directory, shell, logon time, logon terminal and idle time. If that person is not logged on, the computer tells you when that client last logged on.

 If the client has defined a plan, that information is also included. A plan contains any information that the client wants others to know about him or her. This information is contained in a .plan file in your home directory. Using one of the editors on BGUnix (see 6.1 Using the Pico Editor and 6.2 Using the VI Editor), you can create a .plan file for yourself as well.

3.0 Working with Directories

BGUnix has several commands that you can use to work with directories. You can create directories and store files in them, which allows you to organize your information better. You can also develop a hierarchy by creating additional directories within your directories. The following sections describe some of the commands that you can use with directories.

3.1 Listing the Files and Directories in Your Working Directory

To list all of the files and subdirectories within your working directory, or the directory you are currently working within, type the following at the command prompt:

$ **ls**®

If you want more detailed information about the directory contents, you may add arguments to the "ls" command. Of those available, you will probably find the "-a", the "-l" or the two used together (e.g. "-al") to be the most helpful. The "-l" argument gives more detailed information about the files. The "ls" command will not include files whose names begin with a ".", commonly called the dot files, unless the "-a" argument is specified. To add arguments, a space is required between the command and the argument list.

> **$ ls∆-l®**

> *l is for long listing*

This command gives you the following information:

- the file type
- the protection information
- the number of links to the file or directory
- the file or directory owner
- the size of the file or directory
- the date and time that the file or directory was created
- the name of the file or directory

To see the long listing on all files in the directory, type the following at the prompt:

> **$ ls∆-al®**

> *a is for all files, l is for long listing*

3.2 Creating a Directory

To create a directory within your working directory, type the following at the command prompt:

> **$ mkdir∆*dirname*®**

Replace *dirname* with the name you want to give to the directory you are creating.

3.3 Deleting a Directory

Before you can delete a directory, you must make sure that it is empty. You must also make sure that the working directory is the parent directory of the one you want to delete (see 3.4 Checking Your Working Directory and 3.5 Changing Your Working Directory below).

To delete a directory that is located within your working directory, type the following at the command prompt:

> **$ rmdir∆*dirname*®**

Replace *dirname* with the name of the directory that you want to delete.

3.4 Checking Your Working Directory

To see which directory is your current working directory, type the following at the command prompt:

$ **pwd**®

3.5 Changing Your Working Directory

You can change from your working directory to any other directory that you can access. The following sections describe how to change to a directory within your working directory, how to go back to the parent directory, and how to go directly to your home directory from anywhere in your directory structure.

3.5.1 Changing a Directory Located in Your Working Directory

To change to a directory that is located within your working directory, type the following at the command prompt:

$ **cdΔ*dirname*®**

Replace *dirname* with the name of the directory that you want to make your working directory.

3.5.2 Changing to Your Parent Directory

If you want to move up one level in your directory hierarchy, type the following at the command prompt:

$ **cdΔ..**®

3.5.3 Changing to Your Home Directory

If you want to go directly to your home directory, type the following at the command prompt:

$ **cd**®

4.0 Working with Files

BGUnix has several file manipulation commands that you can use to delete files, view files, search files, and perform various operations on your files. The following sections describe some of these file commands.

To create a file, you can use one of the editors available on BGUnix (see Section 6.0, Using the UNIX Editors).

4.1 Deleting a File

To delete a file from your working directory, type the following at the command prompt:

$ **rm**Δ*filename*®

Replace *filename* with the name of the file that you want to delete.

BGUnix asks you if you want to delete the file by giving you the following prompt after you enter the **rm** command:

rm: remove *filename***®**

Type <u>y</u> if you want to delete the file or <u>n</u> if you want to keep the file.

4.2 Viewing a File

To view the contents of a file, type the following at the command prompt:

$ **cat**Δ*filename*®

Replace *filename* with the name of the file you want to view.

To view the file one screen at a time, type the following at the command prompt:

$ **more**Δ*filename*®

After viewing one screen of your file, press the **SPACE BAR** to view the next screen. Repeat this until the end of your file is reached.

4.3 Searching a File for a Text String

To search a file for a particular string of characters, type the following at the command prompt:

$ **grep**Δ'*string*'Δ*filename*®

Replace *string*   with the character string you want to find and *filename* with the name of the file you want to search. The search string is case sensitive. BGUnix prints any lines that contain that string.

4.4 Spell Checking a File

To spell check a file, type the following at the command prompt:

$ **spell**Δ*filename*®

Replace *filename* with the name of the file that you want to spell check.

BGUnix prints a list of the words that may be spelled wrong.

<u>**Note**</u>:   You cannot spell check a file using this command within a text editor. Without opening the file, enter this command directly after the prompt.

4.5 Renaming a File

To rename a file, type the following at the command prompt:

> $ **mv**Δ*oldfilename* Δ*newfilename*®

Replace *oldfilename* with the name of the file you want to rename and *newfilename* with the new name you want to give to the file.

If a file already exists with the new file name, then BGUnix will ask you if you wish to overwrite that file. Type <u>y</u> to overwrite the file or <u>n</u> to keep the file.

4.6 Copying a File

To make a copy of a file, type the following at the command prompt:

> $ **cp**Δ*filename* Δ*newfilename*®

Replace *filename* with the name of the file and *newfilename* with the name you want to give to the copy of the file.

If a file already exists with the new file name, then BGUnix will ask you if you wish to overwrite that file. Type <u>y</u> to overwrite the file or <u>n</u> to keep the file.

4.7 Sorting a File

To sort the contents of a file alphabetically, type the following at the command prompt:

> $ **sort**Δ*filename*®

Replace *filename* with the name of the file that you want to sort. BGUnix returns a list of the sorted information, in the following order:

- Numbers
- Upper-case words
- Lower-case words

BGUnix does not alter the original file.

4.8 Printing a File

The file you send to the printer must be in text format.

If you know the printer name, use this form of the print command:

> $ **lpr**Δ**–P** *printername*Δ*filename*®

The filename is the name of the file you need to print. The printer name or alias for the Hayes 025 Lab is ***hayes025***. To see the printer names of other printers in other locations on campus, look at the contents of /usr/local/etc/printcap.

> $ **moreΔ/usr/local/etc/printcap**®

If you are working in a campus office and know the IP address of a printer on the network, you can use this form of the print command:

> $ **lprΔ–hΔ–P@IP*address*Δ*filename***®

You can get the IP address of the printer by printing out the printer's configuration file.

5.0 Accessing the Online Help

There are two ways to get on-line help while you are using BGUnix. The most comprehensive and easy to read method is only available from an X Connection. At BGSU, use Hummingbird Exceed installed on the Dells in Hayes 025 for an X connection. The other method, reading the man or Unix Program Manual's pages, can be done on any system from within the basic VT 100 terminal window.

5.1 Using the Help Viewer

After logging onto BGUnix using Hummingbird Exceed, use the Help Viewer to access the help files. If the Help Viewer is not displayed on your screen, click on the Help Manager in the control panel to display it.

5.2 Using the Man Pages

The man pages on BGUnix come directly from the *UNIX Programmer's Manual*. They contain information about any command that is available to you. To access the man pages for a specific command, type the following at the command prompt:

> $ **manΔ*command***®

Replace *command* with the command that you want more information about.

To view the man pages a screen full of information at a time, press the **SPACE BAR** after a blinking cursor appears at the bottom of the screen.

To view the information a line at a time, press **RETURN** after a blinking cursor appears at the bottom of the screen.

To quit the man pages and return to the prompt, press **Q**.

If you do not know the specific command, but you know the general topic area that you need help with, type the following at the command prompt:

> $ **manΔ-kΔ*topic***

Replace *topic* with the subject area that you want to find.

BGUnix does a text search on the man pages for that topic.

6.0 Using the UNIX Editors

There are several editors available on BGUnix that you can use to create and edit files. Two of the most popular editors are Pico and Vi. The following sections discuss these editors.

6.1 Using the Pico Editor

Pico is a simple, display-oriented text editor. ITS recommends this editor for clients who are not familiar with any of the standard UNIX editors because it is very easy to use. Pico has three basic features:

- paragraph justification
- case insensitive searching
- spell checking

The following sections explain how to create a new file, how to edit an existing file, how to use the editing commands available on Pico, and how to exit a file.

6.1.1 Creating a New File

To create a new file using Pico, type the following at the command prompt:

> **$ pico**Δ*filename*®

Replace *filename* with the name you want to give to the new file.

6.1.2 Editing an Existing File

To edit an existing file using Pico, type the following at the command prompt:
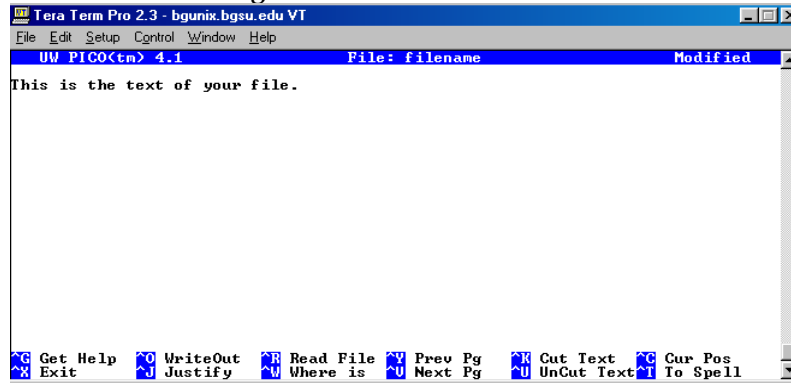
> **$ pico**Δ*filename*®

Replace *filename* with the name of the file that you want to edit.

6.1.3 Using the Editing Commands

When you open a file in Pico, the screen shown in Figure 6.1, Pico Editor Screen, appears.

Figure 6.1 Pico Editor Screen

The first line of the window tells you which version of Pico you are running and what file you are editing. If the file has been modified since it was last saved, "modified" appears in the upper-right corner as well. The text appears in the white area, and at the bottom of the window is a menu-bar that contains your editing options.

The editing options themselves are self-explanatory. To use any of the options, type the key combination that appears in the black boxes in front of the editing option description. Whenever you see **^** (carat), press the **Control** key (**CTRL**).

6.1.4 Exiting a File

To exit a file that you are editing within Pico, use the following key combination:

>   **CTRL + X**

If you have not modified the file, Pico quits and returns you to the command prompt.

If you have modified the file, Pico asks you if you want to save the modified buffer. If you want to save your changes, press **Y**. Otherwise, press **N**. If you answer no, Pico returns you to the command prompt. If you answer yes, Pico asks you what you want to call the file.

To keep the same file name, press **RETURN**, and Pico returns you to the command prompt. To save the changes to a new file and keep the original file unchanged, follow these instructions:

<u>**Note**</u>:   The file name cursor appears at the end of the original file name, one line below it.

1. Press **DELETE** until the file name cursor is directly below the first letter in the original file name.

2. Type the name you want to give to the new file that contains changes, and press **RETURN**. If this file already exists, BGUnix overwrites the old file with the new information.

Pico then returns you to the command prompt.

6.2 Using the Vi Editor

The vi editor is a screen editor. It is a lot more powerful than Pico, but it is also more difficult to learn to use. If you are unfamiliar with vi, ITS recommends that you begin with the vi tutorial to better understand how to use this editor. The vi editor has three modes as shown below in Figure 6.2, Vi Editor Modes. It is important to understand the differences between these modes when you begin using the vi editor.

Figure 6.2
Vi Editor Modes

Mode	Allows You To Enter
Command	Keystroke commands
Input	Text
Last-line	Commands longer than a keystroke

To enter input mode or last-line mode, you must be in command mode; you cannot move directly between input mode and last-line mode.

<u>Note</u>:   All of the vi commands are case sensitive; often times upper- and lower-case commands have different functions.

The following sections discuss the various commands you can use with the vi editor.

6.2.1 Creating a New File

To create a file using the vi editor, type the following at the command prompt:

$ <u>**vi**Δ*filename*</u>®

Replace *filename* with the name you want to give to your new file.

6.2.2 Editing an Existing File

To edit an existing file using the vi editor, type the following at the command prompt:
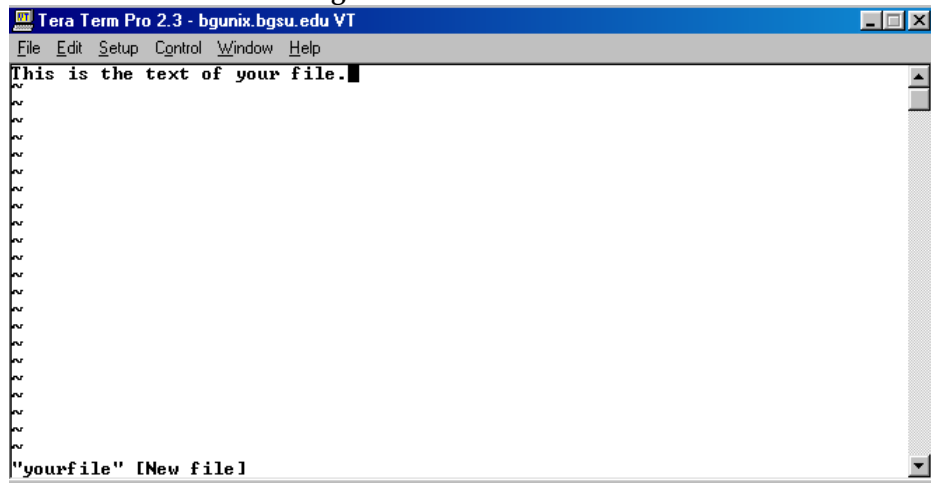
$ <u>**vi**Δ*filename*</u>®

Replace *filename* with the name of the file you want to edit.

6.2.3 Moving Within a File

When you open a file in the vi editor, the screen shown below in Figure 6.3, Vi Editor Screen, appears.

Figure 6.3 Vi Screen Editor

The text of your file, if there is any, appears at the top of the screen, with the cursor on the first letter. The name of the file, the number of lines, and the number of characters appear at the bottom of the screen.

You can move the cursor using the arrow keys when you are in command mode and input mode. However, if you try to move the cursor beyond the end of the file while you are in input mode, vi returns you to command mode.

You can also move the cursor when you are in command mode by using the keystrokes listed in Figure 6.4, Cursor Keystroke Commands in Command Mode.

Table 6.4
Cursor Keystroke Commands in Command Mode

Direction to Move the Cursor	Keystroke or Key Combination
Left	h
Down	j
Up	k
Right	l
Beginning of file	1 + SHIFT + G
Top of current screen	SHIFT + G
middle of current screen	SHIFT + M
Bottom of current screen	SHIFT + L
down half of a screen	CTRL + D
up half of a screen	CTRL + U
Forward one screen	CTRL + F
Back one screen	CTRL + B

6.2.4 Appending Information

To add text after the cursor, you must append it. Appending text is one way to enter the input mode from the command mode.

To append text after the cursor, use the following key:

A

To append text at the end of the current line, use the following key combination:

SHIFT + A

To go back to command mode from input mode, press **ESC**.

6.2.5 Inserting Information

To add text before the cursor, you must insert it. Inserting text is another way to enter input mode from the command mode.

To insert text before the cursor, use the following key:

I

To insert text at the beginning of the current line, use the following key combination:

SHIFT + I

To go back to command mode from input mode, press **ESC**.

6.2.6 Deleting Information

You can delete text while you are in insert mode by using the **DELETE** key. The cursor backs up over the text but does not erase anything until you type new text or return to command mode.

To delete a character while you are in command mode, use the following key:

X

To delete the current line while you are in command mode, use the following key combination:

D + D

To delete a certain number of lines while you are in command mode, beginning with the current line, use the following key combination:

number + **D + D**

Replace *number* with the number of lines, including the current line, that you want to delete.

6.2.7 Undoing the Last Command

To undo the last command you entered while you are in command mode, use the following key:

> **U**

6.2.8 Displaying Line Numbers

To display the line numbers in your file, enter last-line mode from command mode by typing **:** (colon). Then, type the following:

> **: setΔnu**®

The line numbers appear to the left of the text.

To turn the line numbers off while you are in last-line mode, type the following:

> **: setΔnonu**®

6.2.9 Exiting a File

To save your changes and exit a file while you are in command mode, use the following key combination:

> **SHIFT + Z + Z**

You can also save your changes and exit a file while you are in last-line mode. To enter last-line mode, type **:** (colon). Then, type the following:

> **: wq**®

7.0 Redirecting Standard Input and Output

Normally, when you execute a command, the output is displayed on the terminal screen and any necessary input comes from the terminal. You can send the output of a command to a file, or you can get the input of a command from a file by using redirection.

To redirect the output of your command to a file, type the following at the command prompt:

> **$ *command*Δ>Δ*filename*®**

Replace *command* with the command you want to execute and *filename* with the name of the file that you want to hold the output. If this file already exists, then BGUnix overwrites the old information with the new information.

To append the output of a command to a file, type the following at the command prompt:

$ *command*Δ*>>*Δ*filename*®

To redirect the input of your command from a file, type the following at the command prompt:

$ *command*Δ*<*Δ*filename*®

Replace *command* with the command you want to execute and *filename* with the name of the file that contains the input for your command.

7.1 Using Pipes

You can use pipes to redirect the standard output of one command directly into the standard input of another command. To use a pipe in this way, type the following at the command prompt:

$ *command1*Δ*|*Δ*command2*®

Replace *command1* with the command you want to use as the input for *command2*.

8.0 Additional Help

For questions associated with BGSU hardware, software, network connections, BGNet accounts, class accounts or other computer accounts, clients can consult the ITS web pages at URL:

http://www.bgsu.edu/its

Comments, corrections, or suggestions concerning this document can also be reported to the TSC. Photocopying of this document is encouraged.