Chapter 1: Introduction

```
[root@caladan ~]# ssh reader@localhost -p 10022
reader@localhost's password:
Welcome to Ubuntu 18.04 LTS (GNU/Linux 4.15.0-23-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Fri Jun 22 14:20:02 UTC 2018

  System load:  0.13               Processes:             89
  Usage of /:   42.0% of 9.78GB    Users logged in:       1
  Memory usage: 12%                IP address for enp0s3: 10.0.2.15
  Swap usage:   0%


0 packages can be updated.
0 updates are security updates.


Last login: Fri Jun 22 14:19:29 2018 from 10.0.2.2
reader@ubuntu:~$ █
```
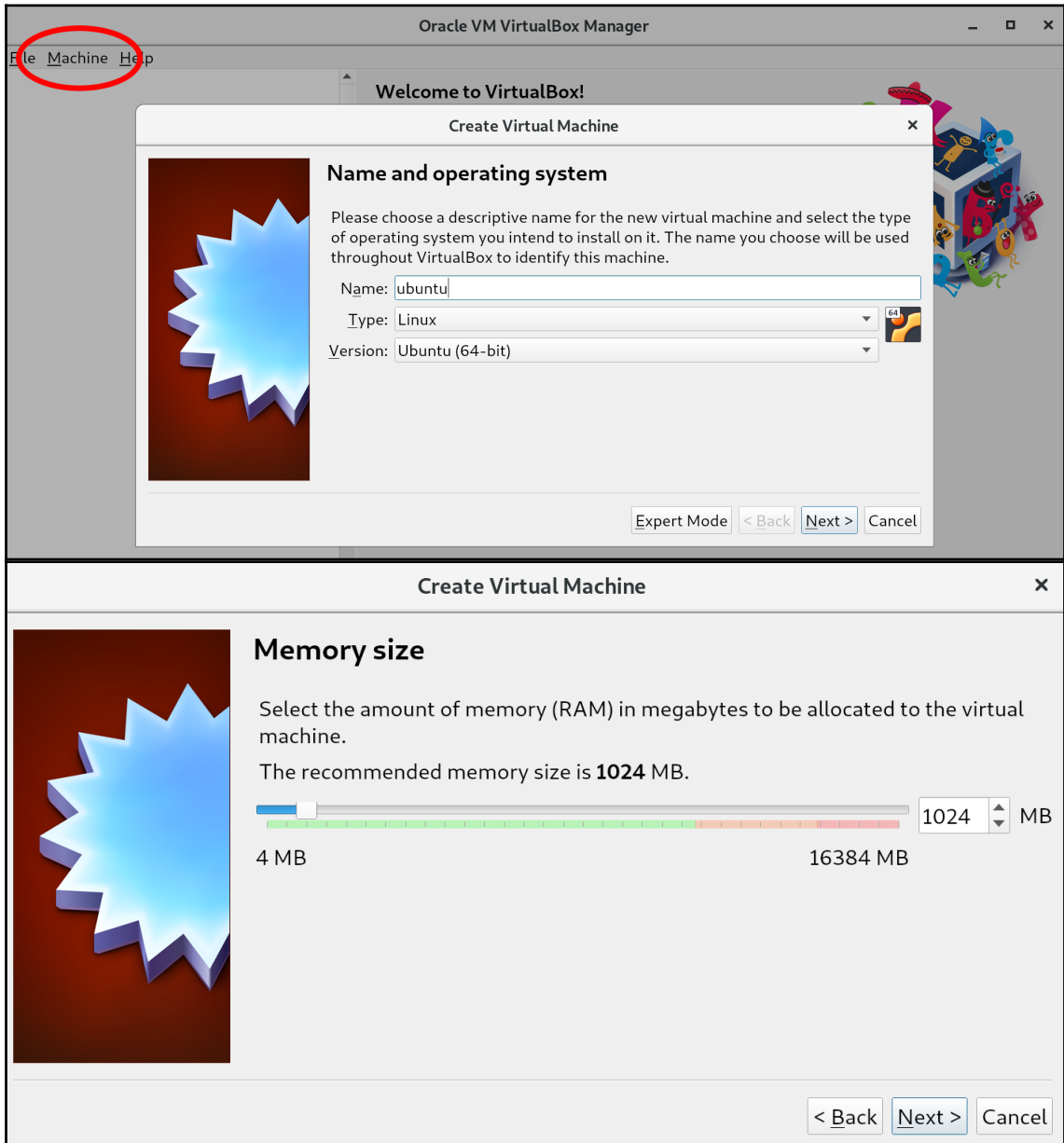
Chapter 2: Setting Up Your Local Environment

Create Virtual Machine

Hard disk

If you wish you can add a virtual hard disk to the new machine. You can either create a new hard disk file or select one from the list or from another location using the folder icon.

If you need a more complex storage set-up you can skip this step and make the changes to the machine settings once the machine is created.

The recommended size of the hard disk is **10.00 GB**.

○ Do not add a virtual hard disk

◉ Create a virtual hard disk now

○ Use an existing virtual hard disk file

Empty

< Back | Create | Cancel

Create Virtual Hard Disk

Hard disk file type

Please choose the type of file that you would like to use for the new virtual hard disk. If you do not need to use it with other virtualization software you can leave this setting unchanged.

◉ VDI (VirtualBox Disk Image)

○ VHD (Virtual Hard Disk)

○ VMDK (Virtual Machine Disk)

Expert Mode | < Back | Next > | Cancel

Create Virtual Hard Disk

Storage on physical hard disk

Please choose whether the new virtual hard disk file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).

A **dynamically allocated** hard disk file will only use space on your physical hard disk as it fills up (up to a maximum **fixed size**), although it will not shrink again automatically when space on it is freed.

A **fixed size** hard disk file may take longer to create on some systems but is often faster to use.

- ● Dynamically allocated
- ○ Fixed size

< Back   Next >   Cancel

Create Virtual Hard Disk

File location and size

Please type the name of the new virtual hard disk file into the box below or click on the folder icon to select a different folder to create the file in.

ubuntu

Select the size of the virtual hard disk in megabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard disk.

10.00 GB

4.00 MB   2.00 TB

< Back   Create   Cancel
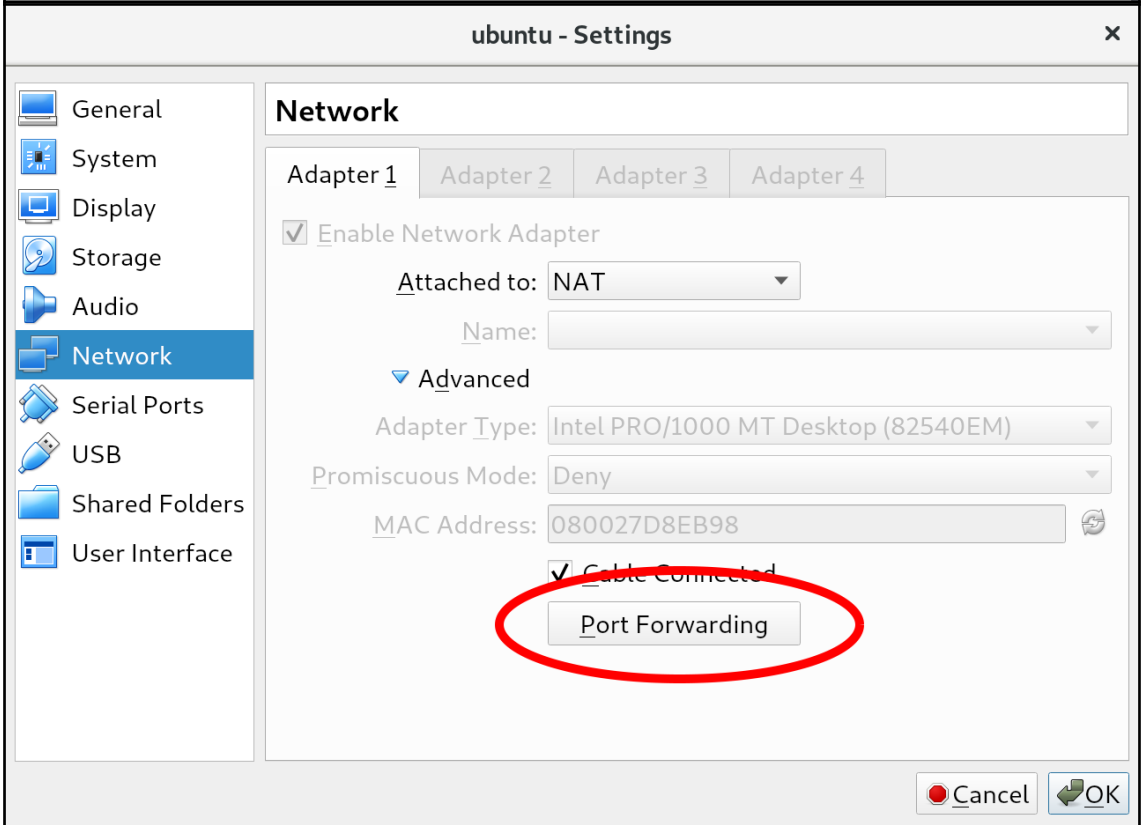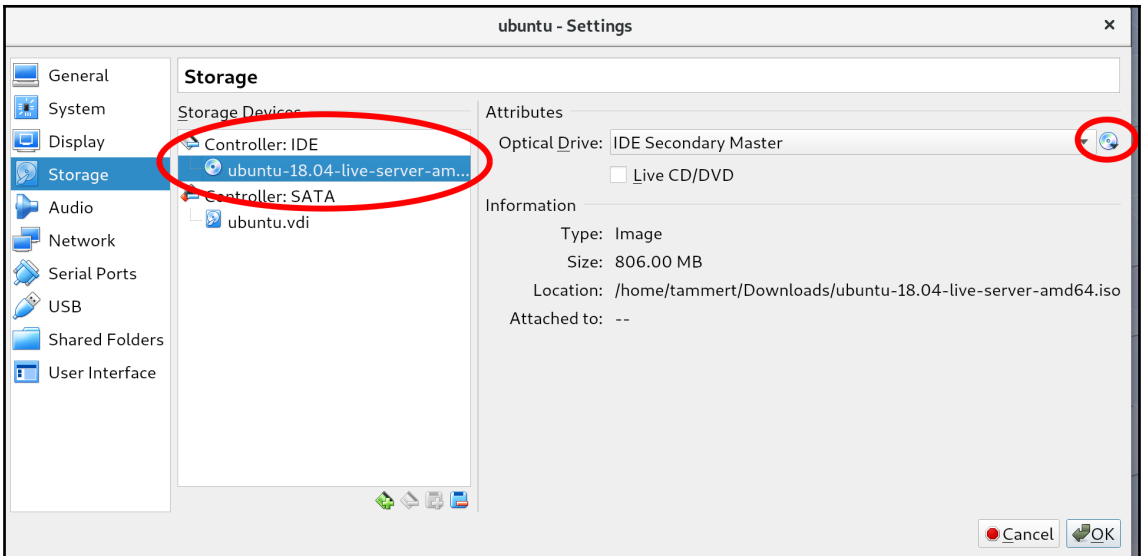
Name	Protocol	Host IP	Host Port	Guest IP	Guest Port
Port Forwarding Rules					✕
SSH	TCP		2222		22

Willkommen! Bienvenue! Welcome! Добро пожаловать! Welkom!

Please choose your preferred language

English	>
Asturianu	>
Català	>
Hrvatski	>
Nederlands	>
Suomi	>
Deutsch	>
Ελληνικὰ	>
Magyar	>
Latviešu	>
Norsk bokmål	>
Polski	>
Русский	>
Español	>
Українська	>

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Use UP, DOWN and ENTER keys to select your language.

Keyboard configuration

Please select your keyboard layout below, or select "Identify keyboard" to
detect your layout automatically.

Layout: (+) English (US)

Variant: (+) English (US) - English (US, intl., with dead keys)

[Identify keyboard]

[Done   ]
[Back   ]

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Use UP, DOWN and ENTER keys to select your keyboard.

Ubuntu 18.04

Welcome to Ubuntu! The world's favourite platform for clouds, clusters, and
amazing internet things. This is the installer for Ubuntu on servers and
internet devices.

Install Ubuntu   >
Install MAAS bare-metal cloud (region)   >
Install MAAS bare-metal cloud (rack)   >

[Back   ]

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Use UP, DOWN arrow keys, and ENTER, to navigate options

Network connections

Configure at least one interface this server can use to talk to other machines,
and which preferably provides sufficient access for updates.

enp0s3   >   Will use DHCP for IPv4, currently has address: 10.0.2.15
                Has no IPv6 configuration, currently has address: fe80::a00:27ff:fed8:eb98
                08:00:27:d8:eb:98 Intel 82540EM Gigabit (1G)

[Done   ]
[Back   ]

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Select an interface to configure it or select Done to continue

Configure proxy

If this system requires a proxy to connect to the internet, enter its details
here.

Proxy address: [   ]
                  If you need to use a HTTP proxy to access the outside world,
                  enter the proxy information here. Otherwise, leave this blank.

                  The proxy information should be given in the standard form of
                  "http://[[user][:pass]@]host[:port]/".

[Done   ]
[Cancel   ]

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Select an interface to configure it or select Done to continue

Filesystem setup

The installer can guide you through partitioning an entire disk or, if you prefer, you can do it manually.

If you choose to partition an entire disk you will still have a chance to review and modify the results.

```
[ Use An Entire Disk ]
[ Manual             ]
[ Back               ]
```

```
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```

Choose guided or manual partitioning

Filesystem setup

FILE SYSTEM SUMMARY

MOUNT POINT	SIZE	TYPE	DEVICE TYPE
/	9.997G	ext4	partition of local disk

AVAILABLE DEVICES

```
DEVI
VBOX
  pa
  pa
Ed
```

```
┌─────────────── Confirm destructive action ───────────────┐
│                                                           │
│  Selecting Continue below will begin the installation     │
│  process and result in the loss of data on the disks      │
│  selected to be formatted.                                │
│                                                           │
│  You will not be able to return to this or a previous     │
│  screen once the installation has started.                │
│                                                           │
│  Are you sure you want to continue?                        │
│                                                           │
│                        [ No       ]                       │
│                        [ Continue ]                       │
│                                                           │
└───────────────────────────────────────────────────────────┘
```

FILE SYSTEM SUMMARY

    MOUNT POINT   SIZE   TYPE   DEVICE TYPE
    /   9.997G   ext4   partition of local disk

AVAILABLE DEVICES

    DEVICE   SIZE   TYPE
    VBOX_HARDDISK_VB3f7c1408-18c08da9   9.998G   local disk
      partition 1, bios_grub   1.000M (0%)
      partition 2, ext4, /   9.997G (99%)
    Edit Partitions   >

                              [Done   ]
                              [Reset   ]
                              [Back   ]

                              6 / 9

              Select available disks to format and mount

Profile setup

Enter the username and password (or ssh identity) you will use to log in to the system.

Your name: `Learn Linux Shell Scripting`

Your server's name: `ubuntu`
The name it uses when it talks to other computers.

Pick a username: `reader`

Choose a password: `********`

Confirm your password: `********`

Import SSH identity: `(+) No`
You can import your SSH keys from Github or Launchpad.

Import Username:

[Done]

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Install complete

```
                         ┌─────────── Finished install! ───────────┐
                 configuring mount: mount-0
         configuring network
           running 'curtin net-meta auto'
             curtin command net-meta
         writing install sources to disk
           running 'curtin extract'
             curtin command extract
               acquiring and extracting image from cp:///media/filesystem
         configuring installed system
           running 'curtin curthooks'
             curtin command curthooks
               configuring apt configuring apt
               installing missing packages
               installing kernel
               setting up swap
               apply networking config
               writing etc/fstab
               configuring multipath
               updating packages on target system
               configuring pollinate user-agent on target system
         finalizing installation
           running 'curtin hook'
             curtin command hook
         executing late commands
                         └─────────────────────────────────────────┘

                              [ View full log ]
                              [ Reboot Now    ]

                        ──────── 9 / 9 ────────

         Thank you for using Ubuntu!
```

```
Ubuntu 18.04 LTS ubuntu tty1

ubuntu login: _
```

```
Ubuntu 18.04 LTS ubuntu tty1

ubuntu login: reader
Password:
Welcome to Ubuntu 18.04 LTS (GNU/Linux 4.15.0-23-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Fri Jun 22 14:06:25 UTC 2018

  System load:  0.64              Processes:             85
  Usage of /:   39.7% of 9.78GB   Users logged in:       0
  Memory usage: 12%               IP address for enp0s3: 10.0.2.15
  Swap usage:   0%

90 packages can be updated.
43 updates are security updates.


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

reader@ubuntu:~$ _
```

Chapter 3: Choosing the Right Tools

View   Selection   Find   Packages   Help

| untitled | Telemetry Consent | Welcome | Welcome Guide |

ATOM

A hackable text editor for the 21st Century

please visit

Atom docs for Guides and the API reference.
Atom forum at discuss.atom.io
Atom org. This is where all GitHub-created Atom packages can found.

Welcome Guide when opening Atom

atom.io × 🐙

Get to know Atom!

- Open a Project
- Version control with Git and GitHub
- Collaborate in real time with Teletype
- Install a Package
- Choose a Theme

+ **Install Packages**

Packages are published to atom.io and are installed to /home/tammert/.atom/packages

`bash`   **Packages**   Themes

autocomplete-bash-builtins 0.3.5   ⌕ 17,135
An autocomplete for common used bash builtin variables and functions

JASONews   ⌂ Install

Project

learn_linux_shell_scripting
  > .git
  v chapter_07
      hello_world.sh
  > chapter_08
  > chapter_09
  > chapter_10

hello_world.sh

```
1   #!/usr/bin/env bash
2
3   ec
```

| f | echo | echo |
| f | exec | exec |

Shell builtin function 'echo'
More..

---

learn_linux_shell_scripting
  .git
  chapter_07
    hello_world.sh
  chapter_08
  chapter_09
  chapter_10
  chapter_11
  chapter_12
  chapter_13
  chapter_14
  chapter_15
  chapter_16

```
1   #!/usr/bin/env bash
2
3   echo "Hello World!"
4
```

☰ Unstaged Changes

No changes

✓☰ Staged Changes

No changes

```
Commit message
```

Commit to master

Hello world!

hello_world.sh

```
1  #!/bin/bash
2
3  echo "Hello World!"
4
```

```
            VIM - Vi IMproved

             version 8.0.1453
           by Bram Moolenaar et al.
Modified by pkg-vim-maintainers@lists.alioth.debian.org
       Vim is open source and freely distributable

            Help poor children in Uganda!
     type  :help iccf<Enter>       for information

     type  :q<Enter>               to exit
     type  :help<Enter>  or  <F1>  for on-line help
     type  :help version8<Enter>   for version info

                                        0,0-1              All
```
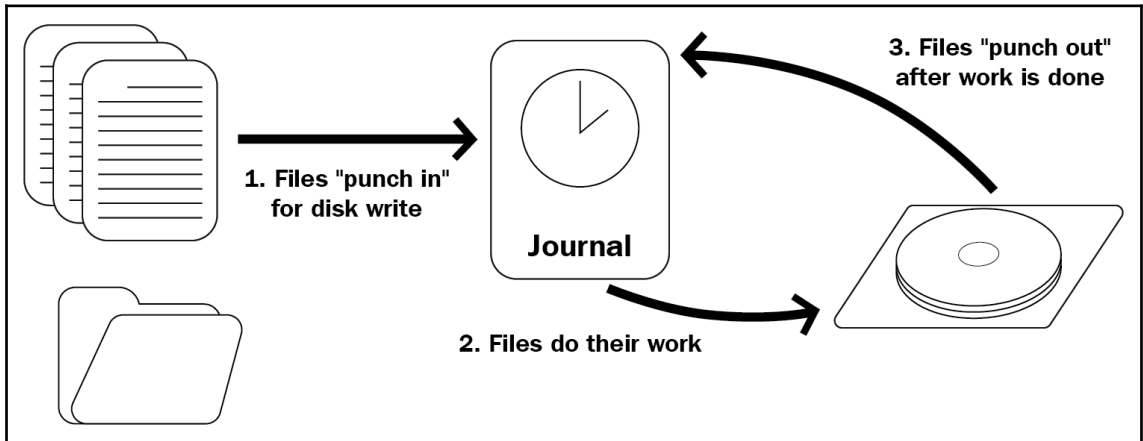
```
This is insert mode! We can now enter any text we like, since our keyboard
actions will not be interpreted.
~
~
~
~
-- INSERT --                                  1,108              All
```

```
This is insert mode! We can now enter any text we like, since our keyboard
actions will not be interpreted.
~
~
                                              1,107              All
```

```
  GNU nano 2.9.3                         New Buffer



^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify   ^C Cur Pos
^X Exit      ^R Read File  ^\ Replace    ^U Uncut Text ^T To Spell  ^_ Go To Line
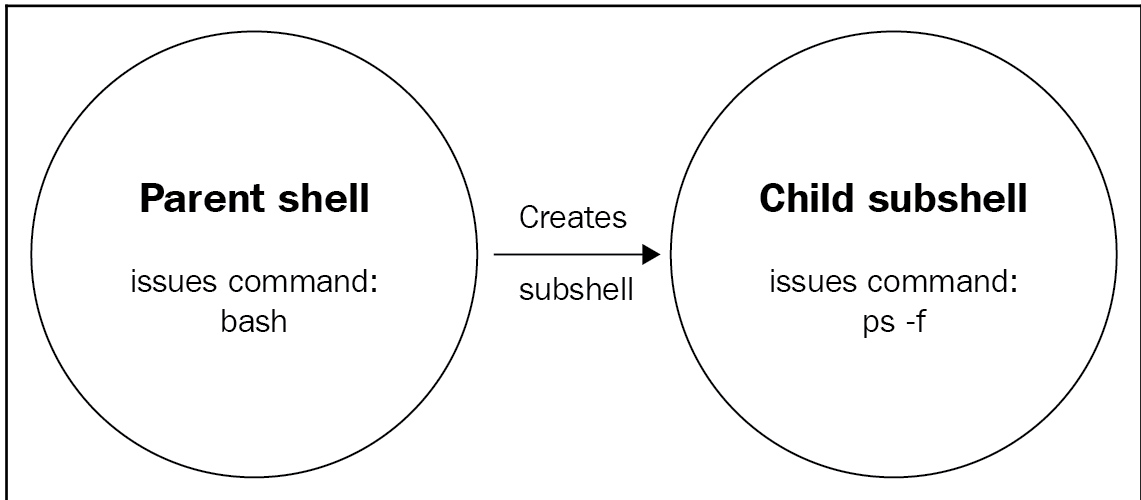```

```
  GNU nano 2.9.3              New Buffer                   Modified

Wow, nano is so easy to use! Why didn't anyone think of this before?

^G Get Help    ^O Write Out   ^W Where Is    ^K Cut Text    ^J Justify
^X Exit        ^R Read File   ^\ Replace     ^U Uncut Text  ^T To Spell
  GNU nano 2.9.3              New Buffer                   Modified

Wow, nano is so easy to use! Why didn't anyone think of this before?

Save modified buffer?   (Answering "No" will DISCARD changes.)
 Y Yes
 N No                   ^C Cancel
  GNU nano 2.9.3              New Buffer                   Modified

Wow, nano is so easy to use! Why didn't anyone think of this before?

File Name to Write: nanofile.txt
^G Get Help       M-D DOS Format    M-A Append       M-B Backup File
^C Cancel         M-M Mac Format    M-P Prepend      ^T To Files
```

 File Edit View Search Terminal Help

reader@ubuntu:~$ ls -l
total 4
-rw-rw-r-- 1 reader reader 69 Jul 14 13:18 nanofile.txt
reader@ubuntu:~$

Chapter 4: The Linux Filesystem

1. Files "punch in" for disk write

2. Files do their work

3. Files "punch out" after work is done

Journal

Chapter 9: Error Checking and Handling

Parent shell

issues command:
bash

Creates

subshell

Child subshell

issues command:
ps -f

Chapter 13: Functions

```
reader@ubuntu:~/scripts/chapter_13$ bash colorful.sh
Hello world!
Hello world!
Hello world!
Hello world!
```