

# Operating System Bonus Assignment

Muhammad Shafeen  
Roll-No: 22P-9278

## 1 Grub Interface : showing all three Operating Systems



Figure 1: Triple Boot

## 2 Ubuntu Installation

### 2.1 Step 1: GRUB Menu



Figure 2: GRUB menu offers options to try or install Ubuntu, alongside other useful choices.

### 2.2 Step 2: Booting into the Installer

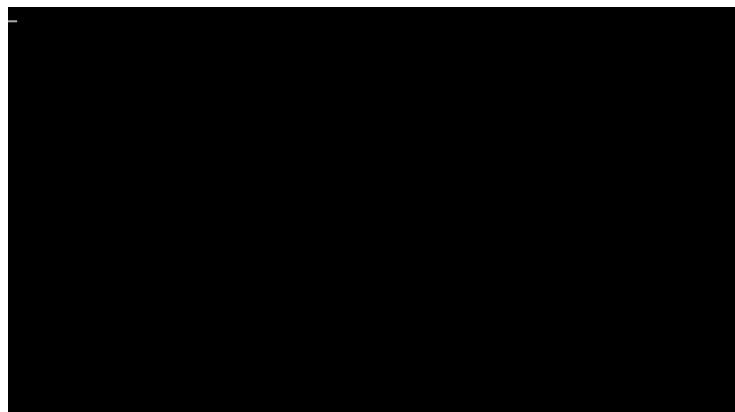


Figure 3: The system begins loading the Ubuntu installer.

### 2.3 Step 3: Ubuntu Splash Screen

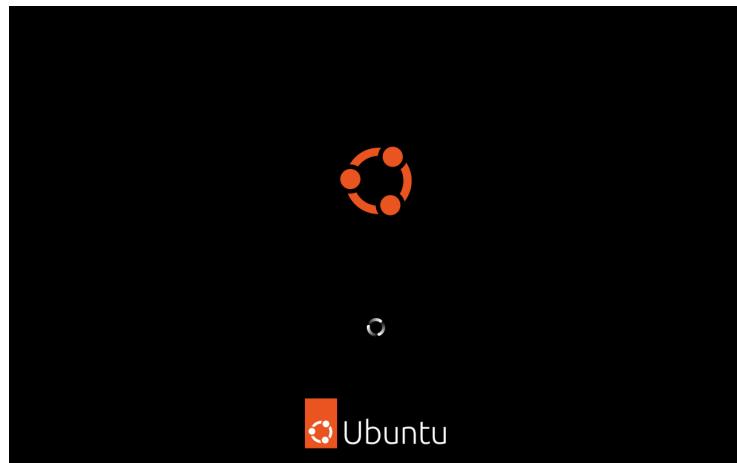


Figure 4: The Ubuntu splash screen with the logo indicates that components are loading.

### 2.4 Step 4: Verifying Installation Configuration

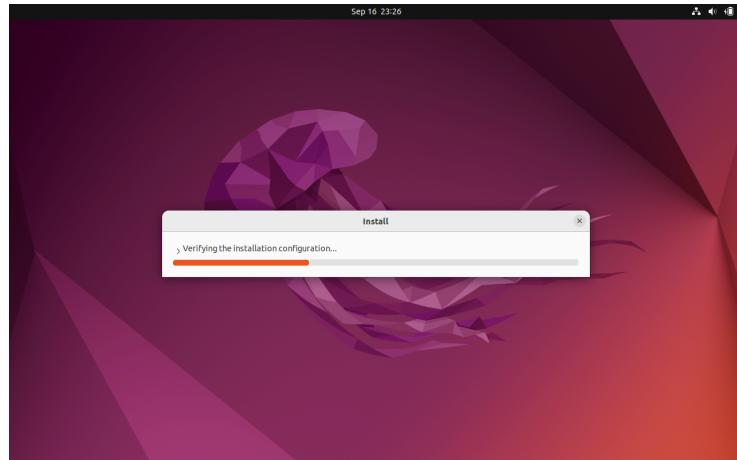


Figure 5: The installer verifies the system configuration to proceed.

## 2.5 Step 5: Installation Logs

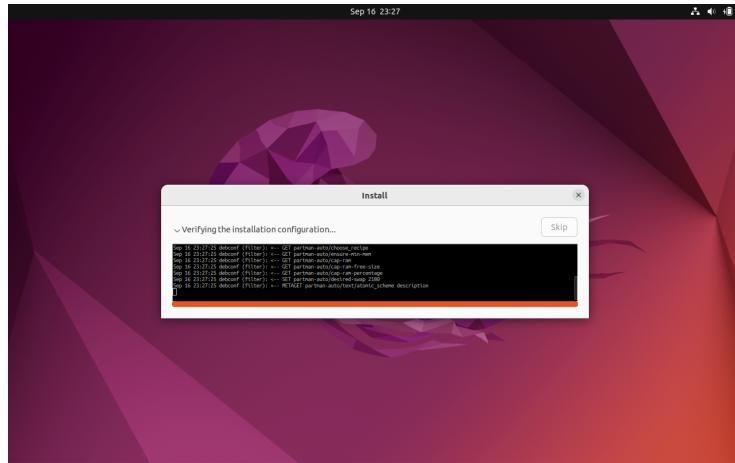


Figure 6: Detailed output logs during the installation process.

## 2.6 Step 6: User Creation

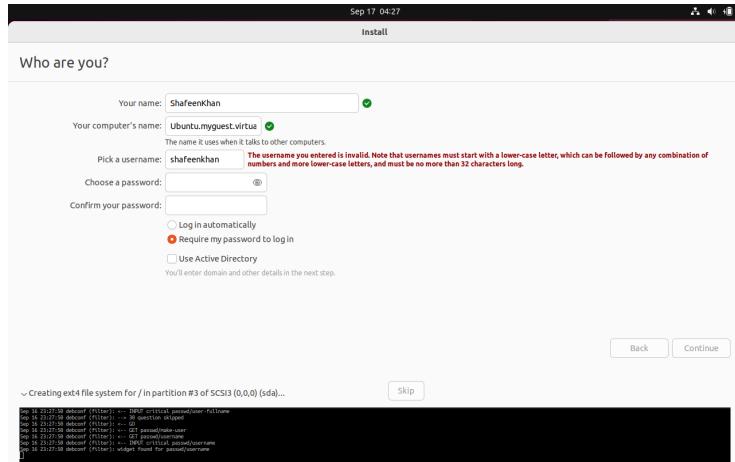


Figure 7: Prompt to create a user account with a username and password.

## 2.7 Step 7: Copying Files

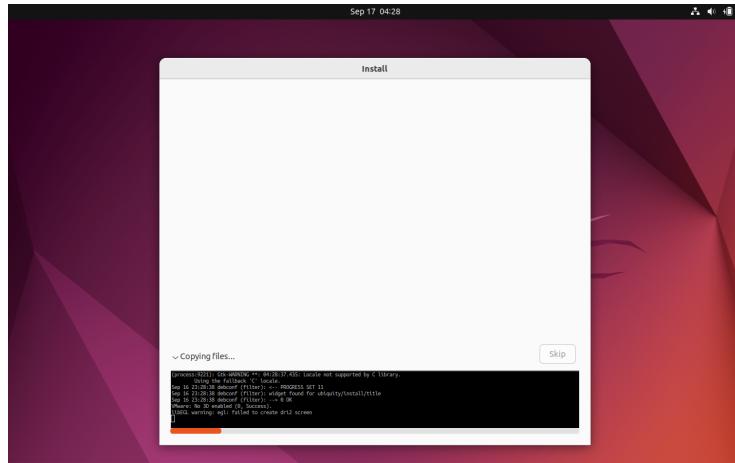


Figure 8: The installer begins copying files to the hard drive.

## 2.8 Step 8: Installing Additional Software

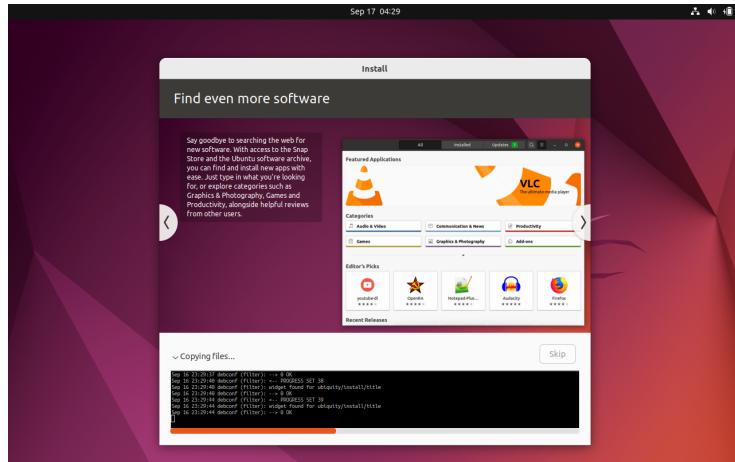


Figure 9: The installer showcases software available in the Ubuntu Software Center.

## 2.9 Step 9: Application Showcase



Figure 10: Showcase of Shotwell Photo Manager and other applications during installation.

## 2.10 Step 10: Web Browsing Tools

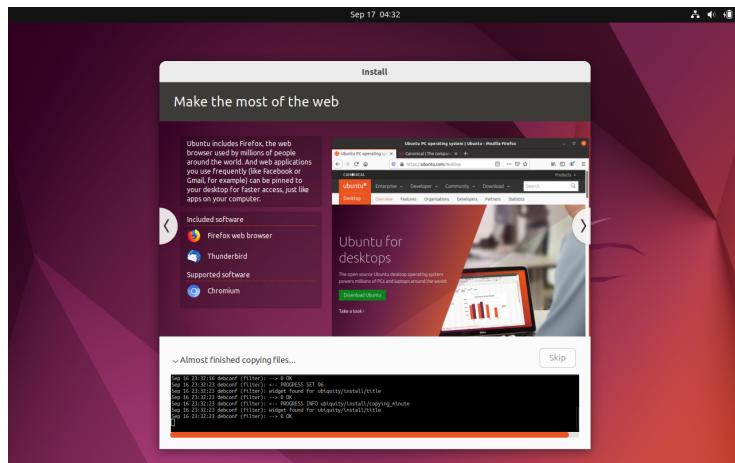


Figure 11: Showcase of web browsers like Firefox and Thunderbird.

## 2.11 Step 11: Accessibility Options

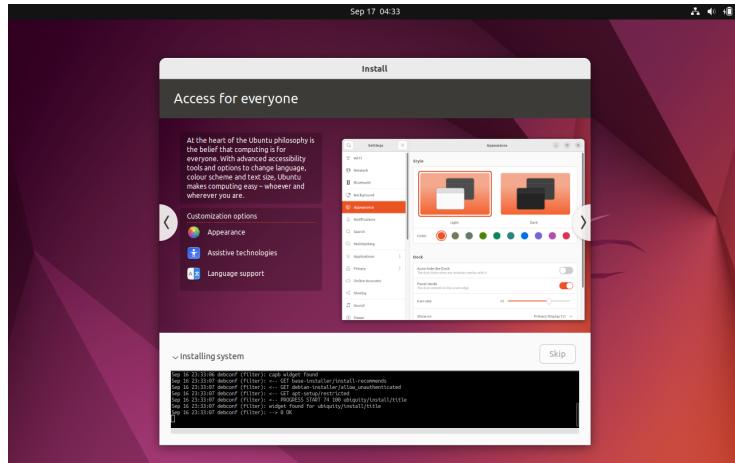


Figure 12: Ubuntu highlights accessibility options such as appearance, assistive technologies, and language support.

## 2.12 Step 12: Help and Support

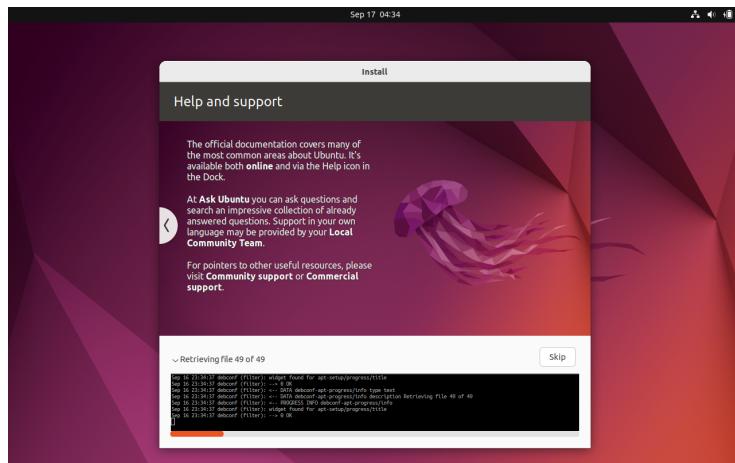


Figure 13: Ubuntu provides help and support channels, including the "Ask Ubuntu" community.

## 2.13 Step 13: Loading USB Storage Modules

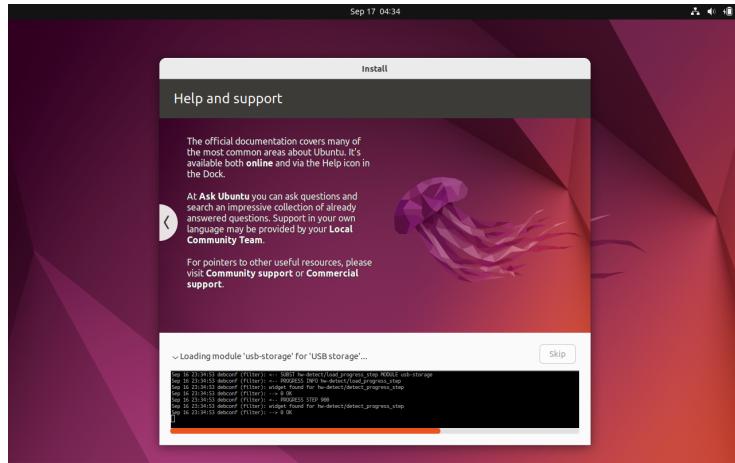


Figure 14: The installer loads modules for USB storage as part of the final installation process.

## 2.14 Step 14: GRUB Installation

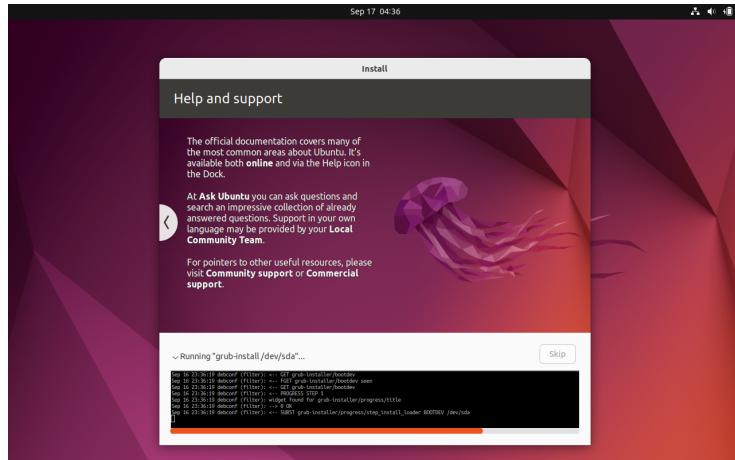


Figure 15: The system installs GRUB, the bootloader, onto the main storage device.

## 2.15 Step 15: Running dpkg

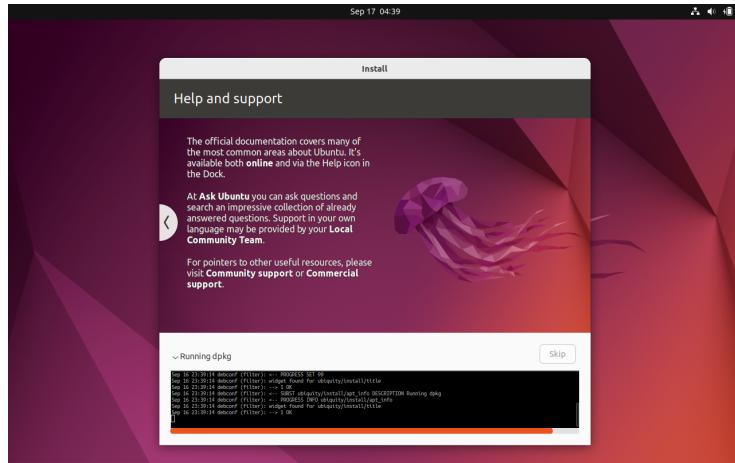


Figure 16: The system runs `dpkg` to manage and configure packages.

## 2.16 Step 16: Copying Installation Logs

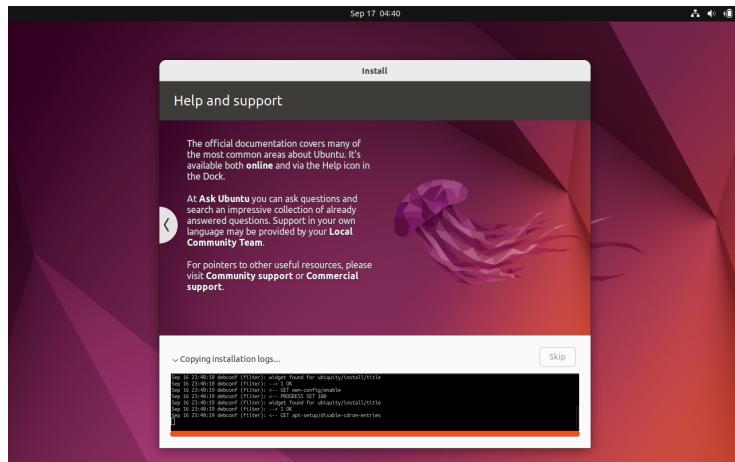


Figure 17: The installer copies logs as the installation process nears completion.

## 2.17 Step 17: Rebooting

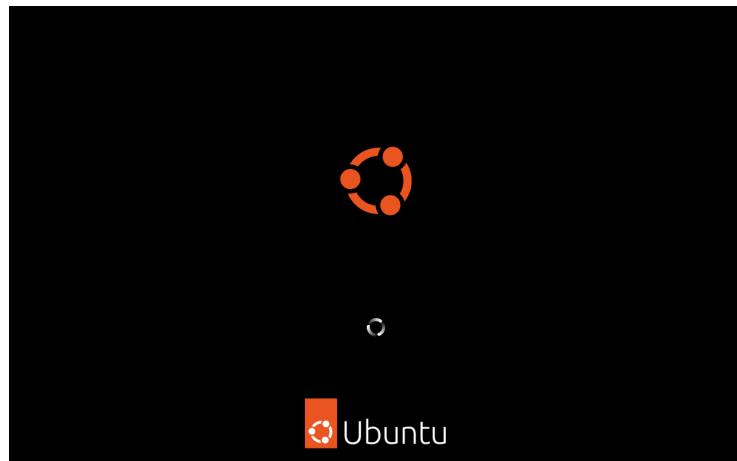


Figure 18: The Ubuntu splash screen reappears as the system reboots after installation.

## 2.18 Step 18: Final Desktop

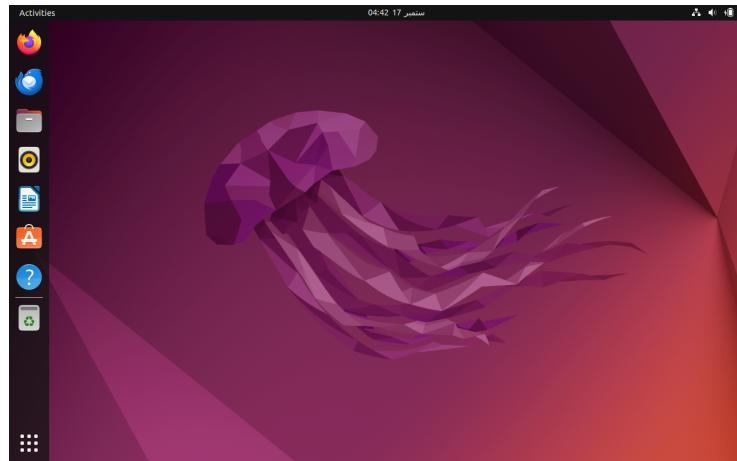


Figure 19: The Ubuntu desktop is displayed after successful installation, with key applications visible in the sidebar.

### 3 Windows Installation

#### 3.1 Step 1: Booting from CD/DVD



Figure 20: The installation process begins by booting from the CD or DVD.

### 3.2 Step 2: Setup Initialization

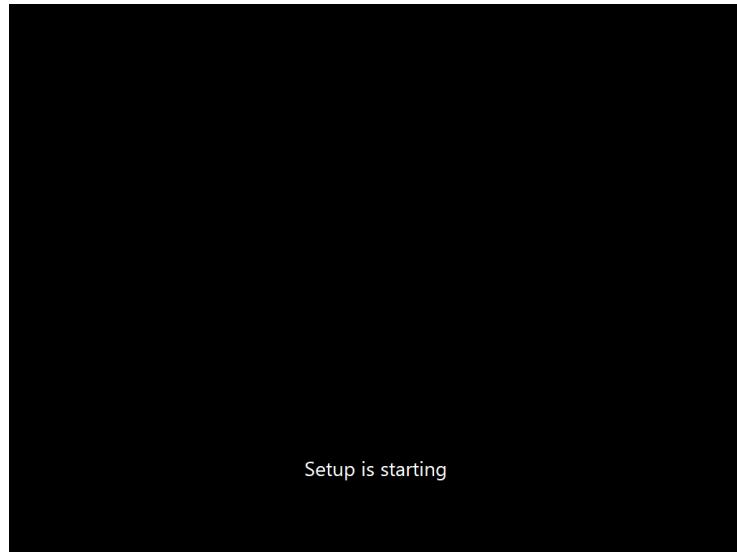


Figure 21: Windows setup is starting.

### 3.3 Step 3: Language and Preferences Selection

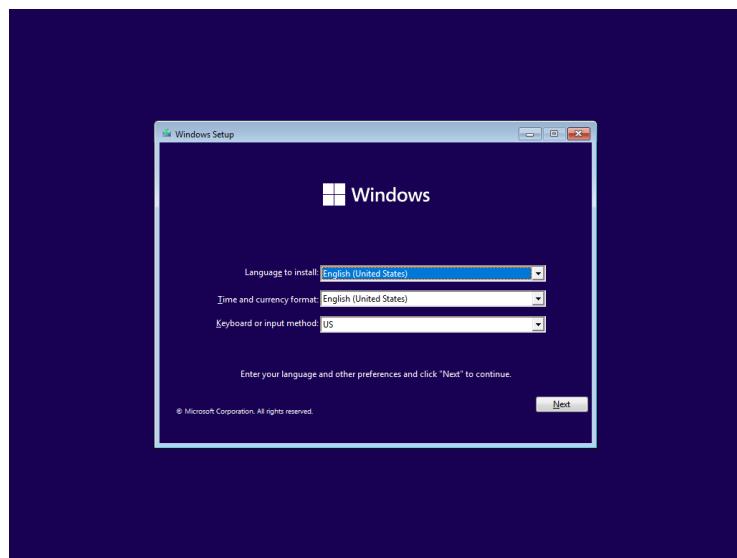


Figure 22: The Windows setup asks for language, time, and keyboard preferences.

### 3.4 Step 4: Installation or Repair Options



Figure 23: The user can either install Windows or access repair tools.

### 3.5 Step 5: Product Key Activation

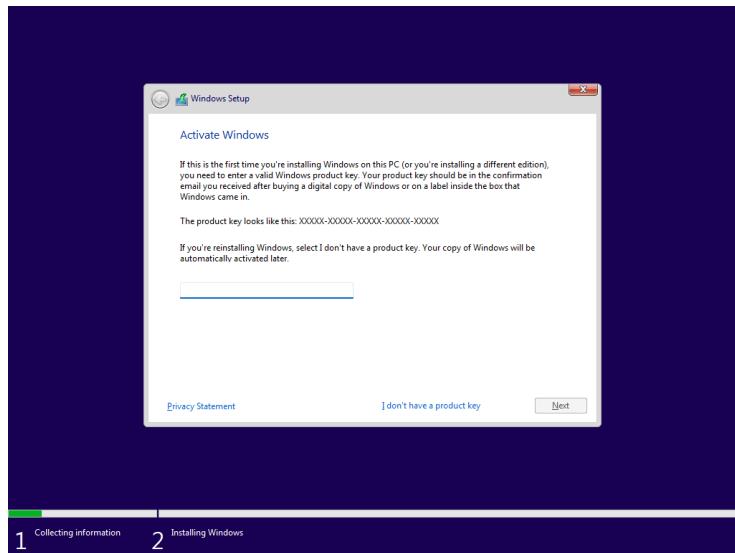


Figure 24: The product key entry screen for activating Windows.

### 3.6 Step 6: Skipping Product Key Entry

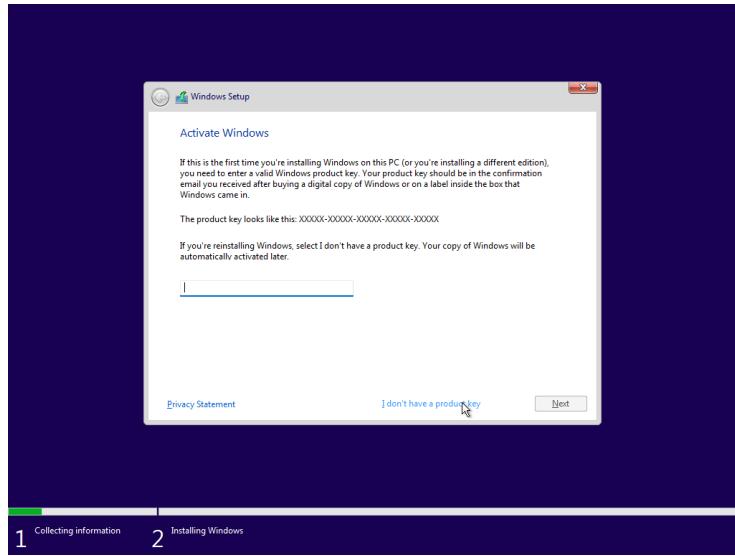


Figure 25: The user opts to continue without entering a product key.

### 3.7 Step 7: Windows Edition Selection

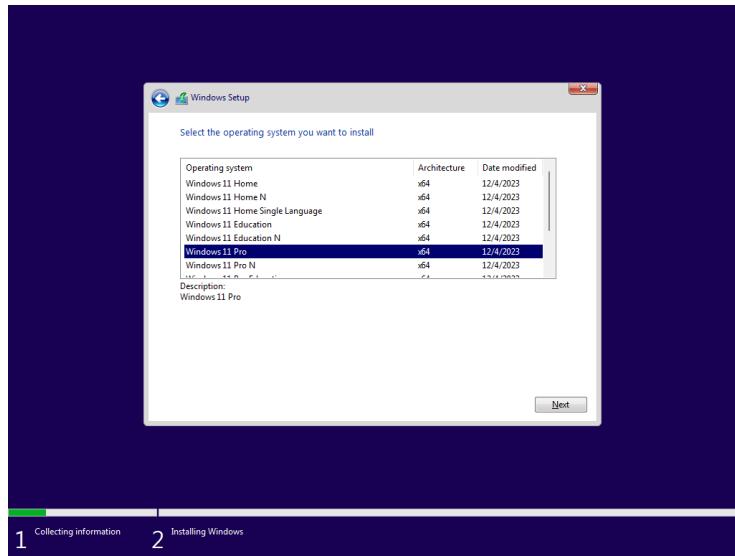


Figure 26: The user selects the edition of Windows to install, such as Windows 11 Pro.

### 3.8 Step 8: License Agreement

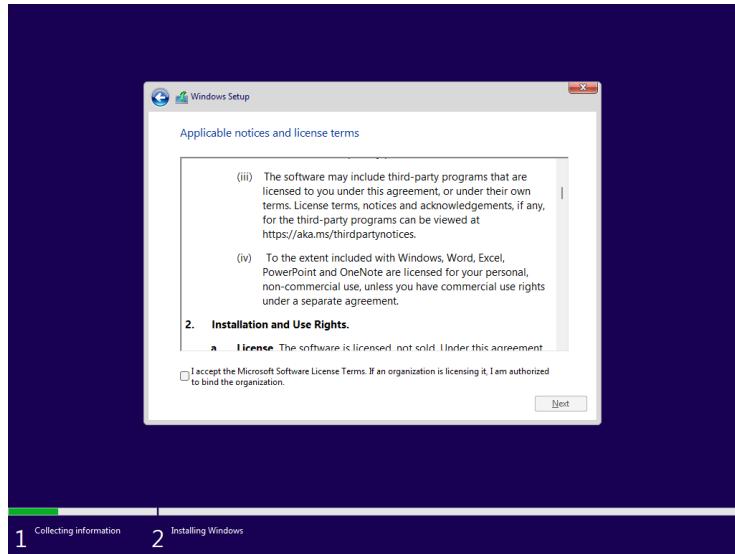


Figure 27: The Windows license terms, which the user must accept to proceed.

### 3.9 Step 9: Installation Type Selection

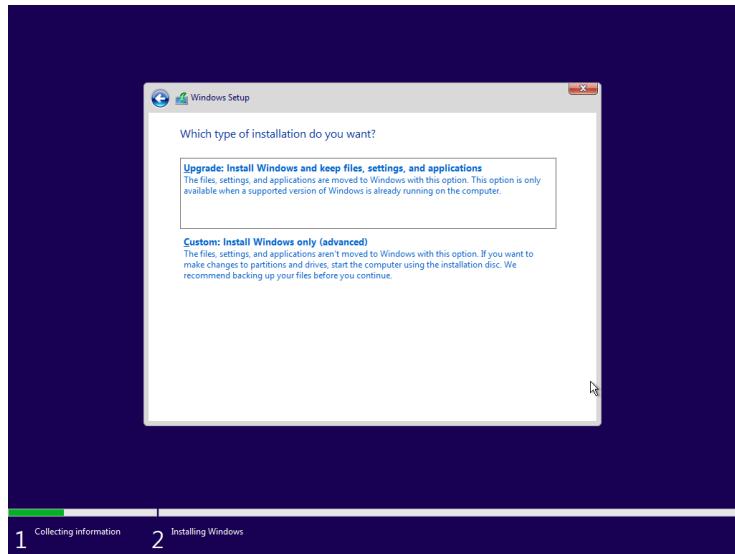


Figure 28: The user is given the choice to upgrade or perform a custom installation.

### 3.10 Step 10: Disk Selection for Installation

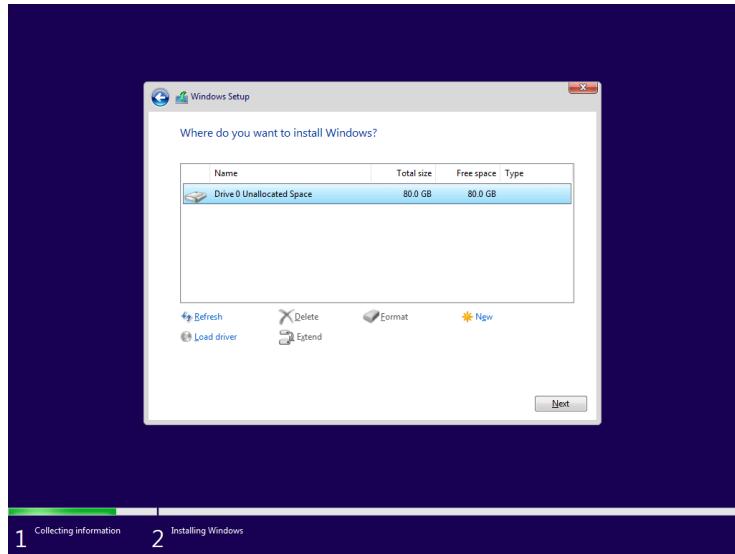


Figure 29: The user selects the disk or partition where Windows will be installed.

### 3.11 Step 11: Windows Setup Partition Selection

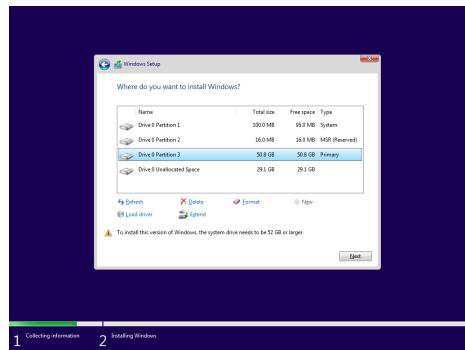


Figure 30: Partition selection screen showing available drives for Windows installation. The user selects a 50.8 GB partition.

### 3.12 Step 12: Installing Windows - Progress

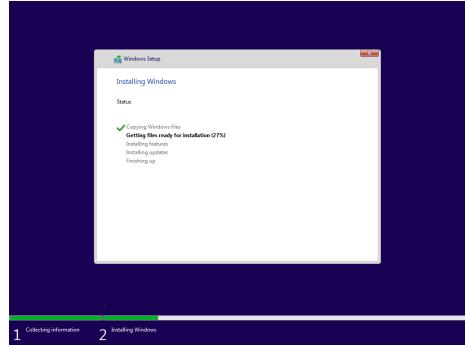


Figure 31: Windows installation progress: Files are being prepared for installation (27% complete).

### 3.13 Step 13: Windows Setup Restart Screen

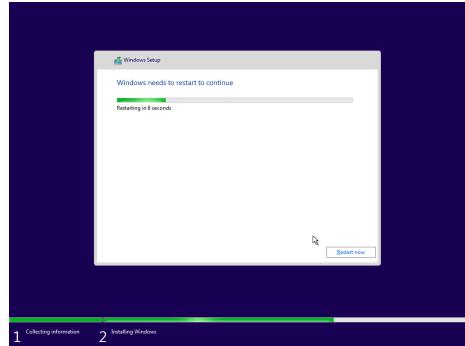


Figure 32: Windows setup requires a restart to continue installation. A countdown to automatic restart is shown.

### 3.14 Step 14: Windows Regional Settings

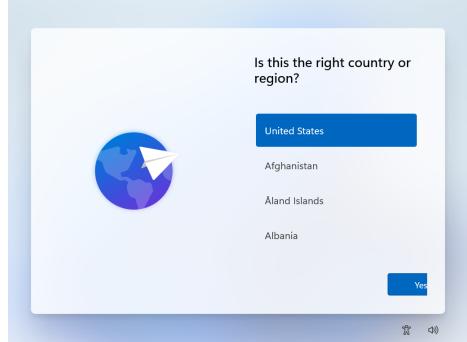


Figure 33: The user is asked to select the country or region. The default option is United States.

### 3.15 Step 15: Windows Keyboard Layout Selection

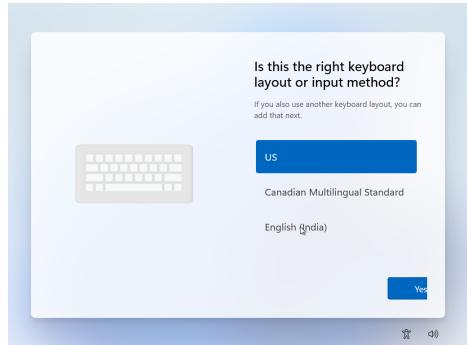


Figure 34: Keyboard layout selection screen with default option set to US. Other layouts like Canadian Multilingual Standard are available.

### 3.16 Step 16: Windows Update Check

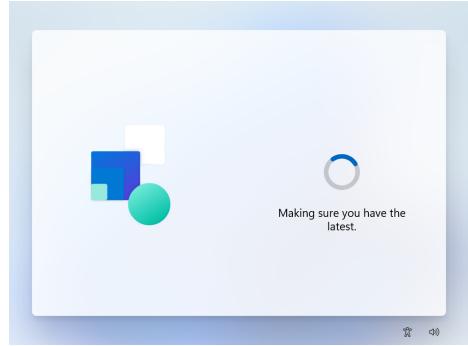


Figure 35: The system is checking for updates to ensure the latest version is installed.

### 3.17 Step 17: Device Name Input

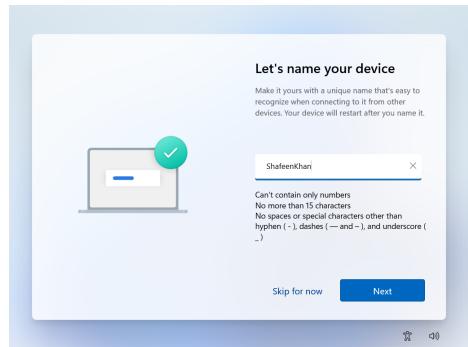


Figure 36: The user is prompted to name their device. The entered name is ShafeenKhan.

### 3.18 Step 18: Microsoft Account Setup



Figure 37: Option to sign in with a Microsoft account to unlock full features like syncing and security settings.

### 3.19 Step 19: Microsoft Account Login

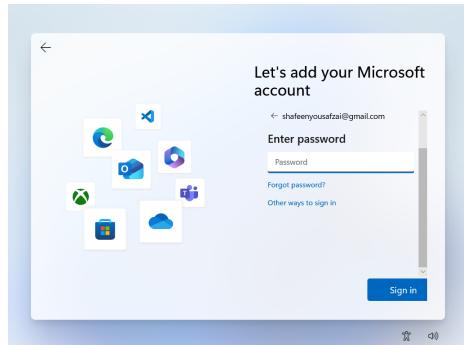


Figure 38: Prompt to enter the password for the Microsoft account (shafeenyousafzai@gmail.com).

### 3.20 Step 20: Microsoft Account Finalization

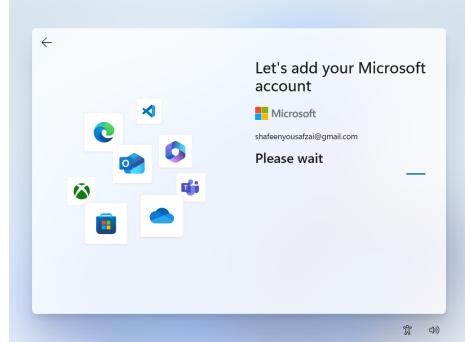


Figure 39: The system is finalizing the login to the Microsoft account.

### 3.21 Step 21: Welcome Back Screen

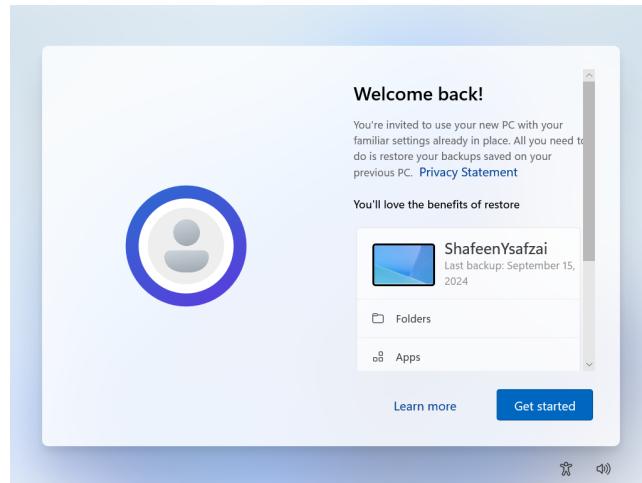


Figure 40: Welcome back screen with the option to restore settings and backups.

### 3.22 Step 22: Choose Privacy Settings

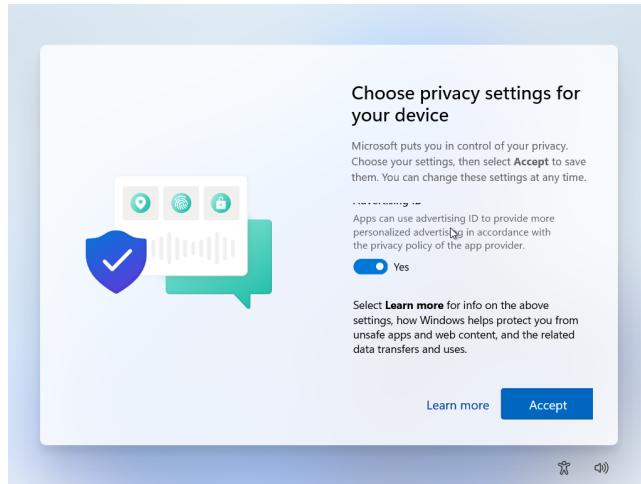


Figure 41: Privacy settings screen for selecting personalized advertising preferences.

### 3.23 Step 23: Recent Browsing Data Access

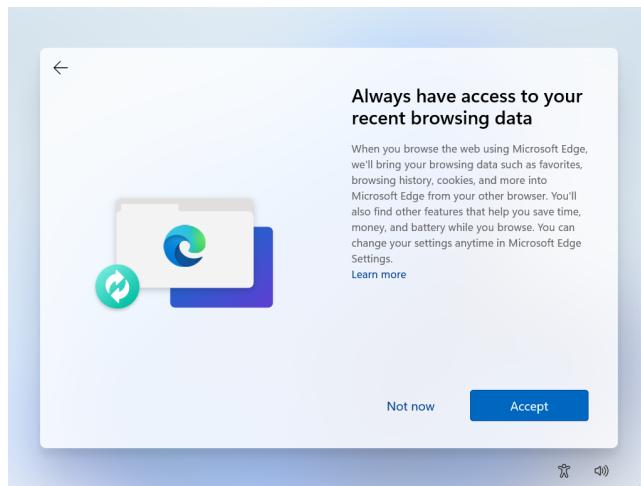


Figure 42: Option to allow access to recent browsing data in Microsoft Edge.

### 3.24 Step 24: Confirm Subscription

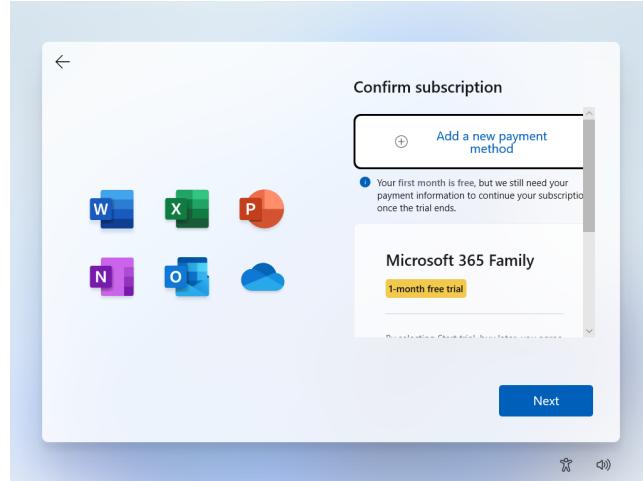


Figure 43: Microsoft 365 Family subscription confirmation screen.

### 3.25 Step 25: Tools for Focus

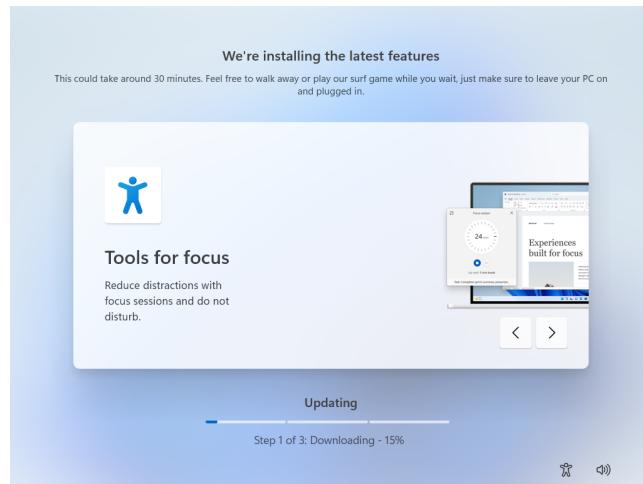


Figure 44: Installing features screen with tools for focus.

### 3.26 Step 26: Installing Update in Progress

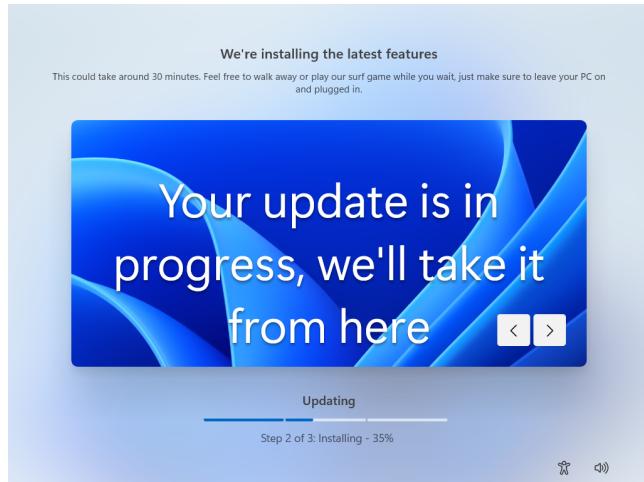


Figure 45: Update installation in progress screen.

### 4 Step 27: Preparing to Restart

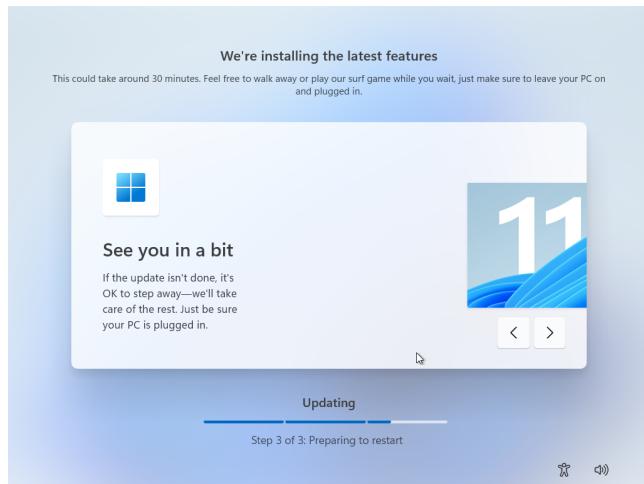


Figure 46: Preparing to restart after update installation.

#### 4.1 Step 28: Updates Underway

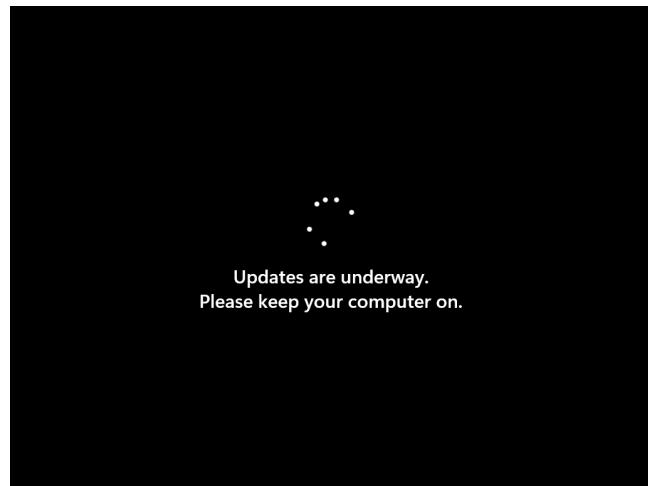


Figure 47: Updates underway screen with instructions to keep the computer on.

#### 5 Step 29: Login Screen

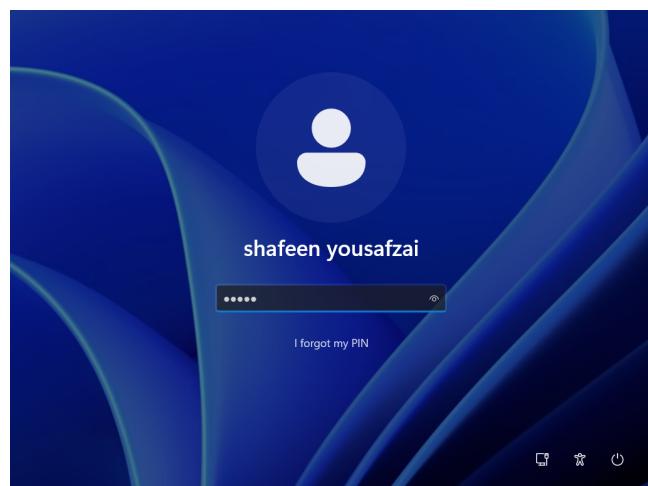


Figure 48: Login screen for user Shafeen Yousafzai.

## 5.1 Step 30: Desktop Screen

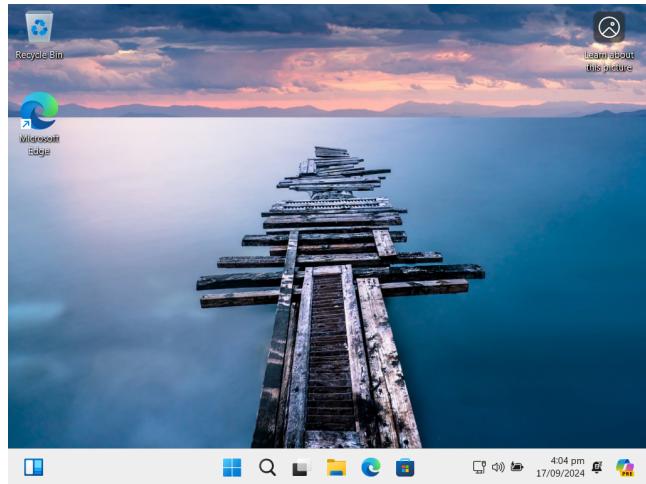


Figure 49: Windows desktop screen with default icons and a scenic wallpaper.

## 6 Arch Linux Installation

### 6.1 Step : 01

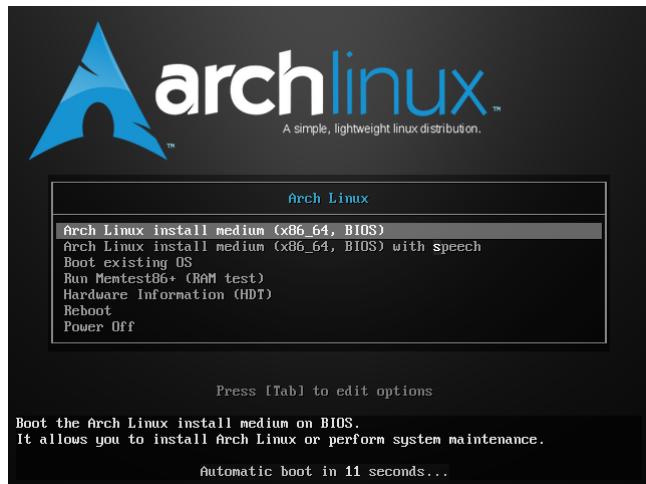


Figure 50: Interface to choose different options. Choose installation

## 6.2 Step : 02

```
probing 220 /etc/init.d/enable... ok
    running early hook /etc/init.d/enable
    : running early hook /etc/init.d/enable-256_4-i386
    : running early hook /etc/init.d/farchiso.pre.i386
    : running early hook /etc/init.d/farchiso.pre.amd1
    : running early hook /etc/init.d/farchiso.pre.amd64
    : Triggering events...
    : 3.1469031 ummgfx 0000:00:02.0: [drm] <ERROR> ummgfx seems to be running on
    : 3.14690111 ummgfx 0000:00:02.0: [drm] <ERROR> This configuration is likely b
    : broken.
    : 
    : 3.1469151 ummgfx 0000:00:02.0: [drm] <ERROR> Please switch to a supported g
    : raphics device to avoid problems.
    : 
    running hook /archiso/pre_copy_mnt)
    : running hook /archiso/pre_cowmount)
    : running hook /archiso/pre_i386)
    : running hook /archiso/pre_amd1)
    : running hook /archiso/pre_amd64)
    : running hook /archiso/pre_hddmnt)
    : 
    : /dev/sr0 mounted successfully.
    : 
    : /dev/sr0 mounted successfully. /dev/sr0 size:256M...
    : Mounting '/dev/sr0' to '/run/archiso/airrootfs'
    : /dev/sr0/loop0 mounted successfully
    : 
    : /dev/sr0 mounted successfully. /dev/sr0 size:256M...
    : 
    : running cleanup hook /udevel
```

Figure 51: loading screen

### 6.3 Step : 03

```
[ 0%] Finished Create List of Static Device Nodes.
[ 0%] Finished Load Kernel Module configfs.
[ 0%] Finished Load Kernel Module dm.
[ 0%] Finished Load Kernel Module dm_mod.
[ 0%] Finished Load Kernel Module dm_crypt.
[ 0%] Finished Load Kernel Module fast.
[ 0%] Finished Load Kernel Module file.
[ 0%] Finished Load Kernel Module fscrypt.
[ 0%] Reached target Preparation for Network.
[ 0%] Reached target Mounting Kernel Configuration File System...
[ 0%] Starting Create Static Device Nodes in /dev gracefully...
[ 0%] Finished Create Static Device Nodes in /dev gracefully...
[ 0%] Started Kernel Configuration File System.
[ 0%] Reached target Mounting Kernel Configuration File System...
[ 0%] Starting Load-Safe OS Random Seed...
[ 0%] Reached target Mounting Kernel Configuration File System...
[ 0%] Finished Load Kernel Modules.
[ 0%] Reached target Mounting Kernel Configuration File System...
[ 0%] Mounted Kernel Configuration File System.
[ 0%] Finished Load adce Rules From Credentials.
[ 0%] Reached target Mounting Persistent Storage...
[ 0%] Starting Apply Kernel Variables.
[ 0%] Reached target Mounting Persistent Storage...
[ 0%] Finished Load-Safe OS Random Seed.
[ 0%] Reached target Mounting Persistent Storage...
[ 0%] Finished Flash Journal to Persistent Storage.
[ 0%] Reached target Mounting Local File Systems...
[ 0%] Finished Monitoring of LVM airways, snapshots etc. using devdconf or progress polling.
[ 0%] Reached target Mounting Local File Systems...
[ 0%] Starting User Database Manager...
[ 0%] Started User Database Manager.
[ 0%] Reached target Resolving Namespaces Manager.
[ 0%] Finished Create Static Device Nodes in /dev gracefully.
[ 0%] Reached target Resolving Namespaces Manager.
[ 0%] Finished Create System Users...
[ 0%] Reached target Resolving Namespaces Manager in /dev...
[ 0%] Finished Create Static Device Nodes in /dev...
[ 0%] Reached target Preparation for Local File Systems...
[ 0%] Reached target Mounting Local File Systems...
[ 0%] Reached target Containers...
[ 0%] Starting Network Configuration Directories...
[ 0%] Reached target Emergency boot/panic/dump directory...
[ 0%] Reached target Local File Systems...
[ 0%] Reached target Mounting Kernel Configuration File System.
[ 0%] Listening on System Extension Image Management.
[ 0%] Starting Automatic Boot Loader Update...
[ 0%] Starting Create System Files and Directories...
[ 0%] Reached target Mounting Kernel Configuration File System.
[ 0%] Started Rule-based Manager for Device Events and Files.
[ 0%] Starting Network Configuration...
```

Figure 52: loading screen

## 6.4 Step : 04



Figure 53: Command to start simple installation

## 6.5 Step : 05

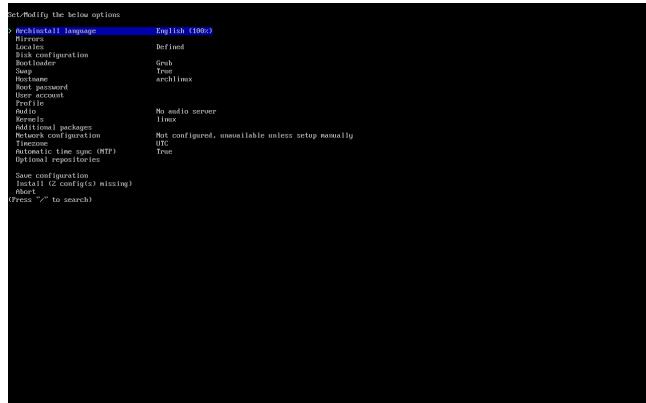


Figure 54: Configure disk , network , profile etc partitions

## 6.6 Step : 06



Figure 55: Configuration Done

## 6.7 Step : 07

Figure 56: Installation in progress , packages being installed

## 6.8 Step : 08



Figure 57: Restarting after installation

## 6.9 Step : 09

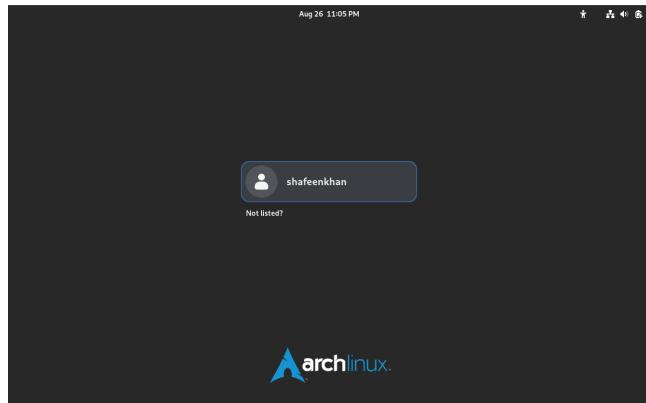


Figure 58: Arch Linux Profile