CorePure64-14.0

EXPLORING TINY CORE LINUX: A CASE STUDY ON OPERATING SYSTEM

MEMBERS

Bishal Lamichhane (078BCT035)
Bipin Bashyal (078BCT033)
Ayush KC (078BCT025)
Roshan Karki (078BCT098)

Repository
tinycorelinux

Linux Size
17 MB

Website
tinycorelinux.net

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INTRODUCTION

QUICK FACTS ON TINY CORE LINUX

- What It Is: Tiny Core Linux 14.0, CLI-only (CorePure.iso)
- OS Type: Independent GNU/Linux distro, not based on Debian/Ubuntu/Arch
- Kernel: Linux 6.1.2-tinycore64 (64-bit, SMP support)
- Size: Ultra-lightweight, ~17 MB base
- Runs In: Fully RAM-based, boots in seconds
- Package Manager: Unique "tce-load" system
- Built: January 2, 2023, by Tiny Core Team

USE CASES

TINY CORE LINUX : PERFECT SCENARIOS

- Old Hardware Revival: Runs on low-spec PCs (e.g., 32 MB RAM)
- Recovery Tool: Fast-boot rescue system for diagnostics
- Embedded Systems: Lightweight base for IoT, kiosks
- Network Booting: PXE setups for diskless clients
- Minimalist Servers: CLI-driven web/FTP hosting
- Learning/Tinkering: Perfect for Linux enthusiasts

CorePure64-14.0

CORE COMPONENTS

TINY CORE LINUX (CLI)

01 Kernel

02 Init System

03 File System

04 Package Management

05 Boot Process

06 Extensions

CorePure64-14.0

KERNEL

The Linux kernel is the heart of Tiny Core Linux, managing hardware and system resources. Version 6.1.2-tinycore64, built on January 2, 2023, is customized for Tiny Core's 64-bit architecture with SMP support, ensuring minimalism and efficiency while running entirely in RAM.

- Version: 6.1.2-tinycore64
- Architecture: 64-bit (x86_64)
- SMP: Supports multiple CPU cores
- Built: Mon Jan 2, 2023
- Role: Boots initramfs, manages hardware
- Source: kernel.org, customized by Tiny Core

INIT SYSTEM

Tiny Core uses BusyBox init, a lightweight, BSD-style init system that avoids complex runlevels. It starts the boot process with minimal overhead, handing off to custom scripts like tc-config for Tiny Core-specific setup, keeping the system lean and fast.

- Type: BusyBox init (BSD-style)
- No Runlevels: Simple script execution
- Startup: Triggers rcS, then tc-config
- Minimal: Low resource usage
- Userspace: Transitions to tc user or root

FILE SYSTEM

Tiny Core leverages a RAM-based tmpfs as its root filesystem, paired with Squashfs for TCZ extensions. It supports ext2/3/4 and vfat for storage, with persistence options like mydata.tgz backups, balancing speed and minimal disk use.

- Root: tmpfs (RAM-based)
- Extensions: Squashfs (TCZ, 4 KB blocks, gzip)
- Supported: ext2, ext3, ext4, vfat
- Persistence: mydata.tgz backup
- Swap: Optional file or partition

PACKAGE MANAGEMENT

The tce-load system is Tiny Core's unique CLI package manager, dynamically installing TCZ extensions into RAM. It's lightweight, independent of traditional managers like APT or Pacman, and supports on-demand or on-boot loading.

- Tool: tce-load (CLI-based)
- Format: TCZ (Squashfs archives)
- Modes: OnBoot, OnDemand, Download-only
- Independent: Not APT/Pacman-based
- Location: Stored in tce/ directory

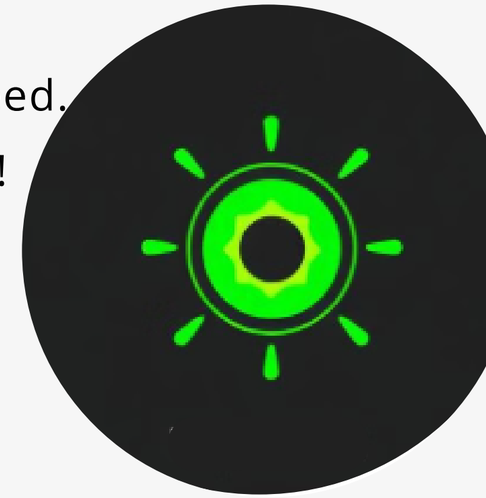
PACKAGE MANAGEMENT

	apt (deb)	yum (rpm)	tce-load (tcz)
Install a package from the repo	apt-get install **pkg**	yum install **pkg**	tce-load -wi **pkg**
Install from a local file	dpkg -i **pkg**	yum localinstall **pkg**	tce-load -i **pkg**
Search	apt-cache search **pattern**	yum search **pattern**	tce-ab
List installed packages	dpkg -l	rpm -qa	ls /usr/local/tce.installed

BOOT PROCESS

Tiny Core’s boot process is streamlined, running entirely in RAM via initramfs. It starts with /init, moves to BusyBox init, then executes tc-config for hardware setup and extension loading, finishing with user login—optimized for speed and minimalism.

- Starts with the Kernel: The system wakes up and loads into RAM fast.
- First Script Runs: A tiny script sets up space in RAM to work.
- Main Startup Begins: A simple tool gets the basics ready to go.
- Setup Time: Another script turns on hardware and extras you need.
- Ready for You: Opens a command screen (CLI) in seconds to use!



BOOT PROCESS

Boot Process of Tiny Core Linux (CorePure.iso) - Part 1

Title: Boot Process: Starting Up

- What Happens?Tiny Core starts fast, runs in RAM
- No hard drive needed, unlike most systems
- Made for CLI-only use in CorePure

  Step 1: Kernel Loads : Kernel (6.1.2-tinycore64) wakes up
  - Unpacks a tiny system into RAM
- Step 2: First Script (/init)Small script sets up RAM space
  - Passes control to the next step
- Step 3: Main Startup (init)BusyBox init kicks in
  - Simple system, gets things ready
  - Hands off to setup scripts

Flow: Kernel → /init → init

BOOT PROCESS

Step 4: Setup Script (tc-config)Main job: Sets up hardware, options

- Checks settings (e.g., USB wait)
- Loads extras (extensions) if needed

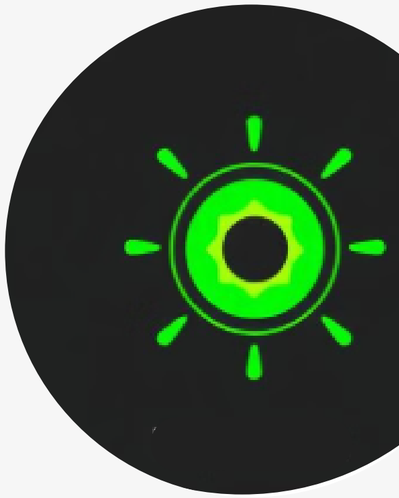
Step 5: Final Touchesbootsync.sh: Runs must-do tasks

- bootlocal.sh: Starts extras in background
- Swap or network can turn on here

Step 6: Ready to UseOpens a terminal (CLI-only)

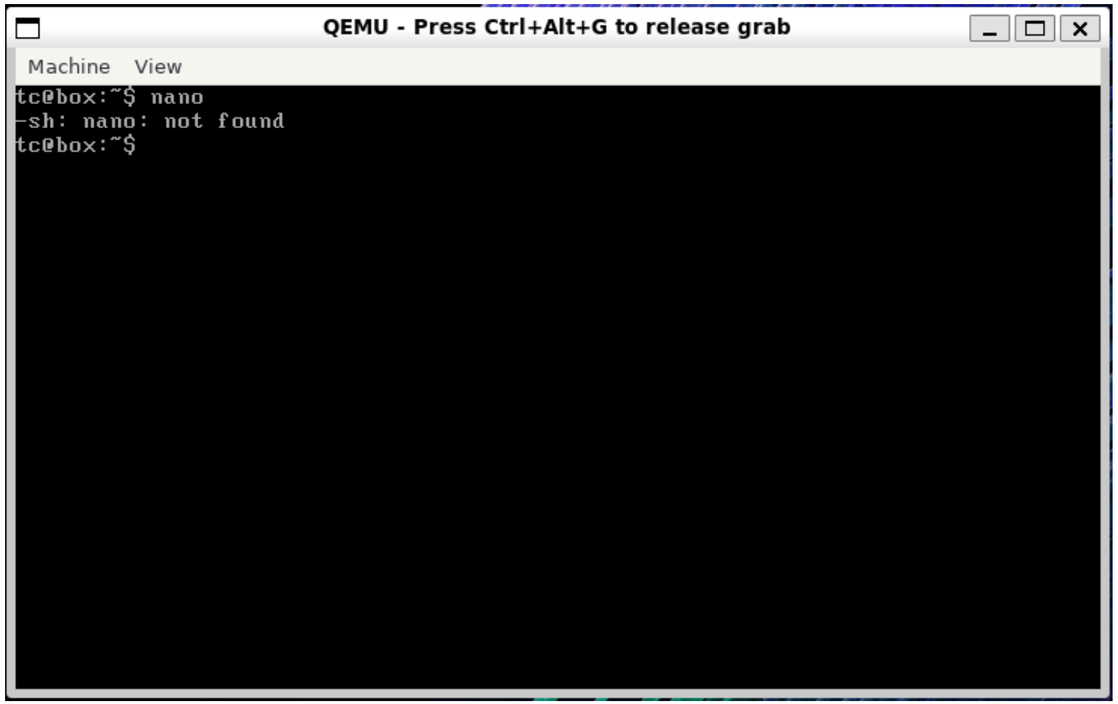
- Logs you in as “tc” user
- Done in seconds!
- Why It’s Fast?Stays in RAM, skips disk
- Perfect for CorePure’s simplicity

Flow: tc-config → bootsync/bootlocal → CLI

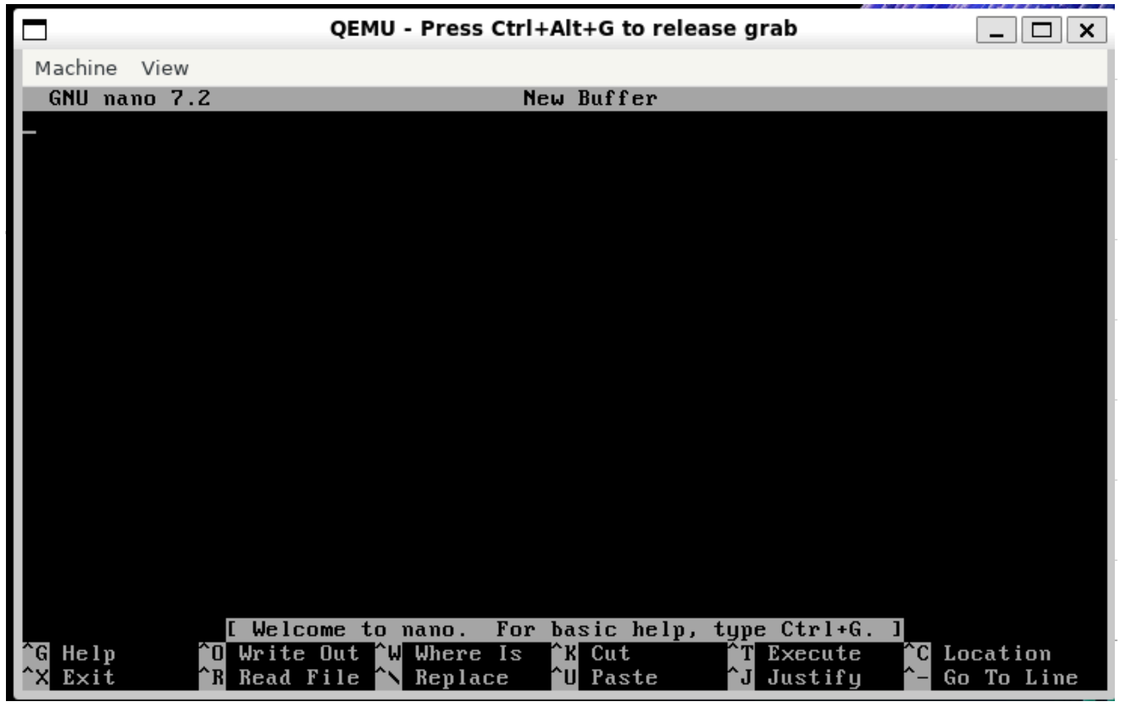


CHANGES WE MADE

Running default iso



Running modified iso

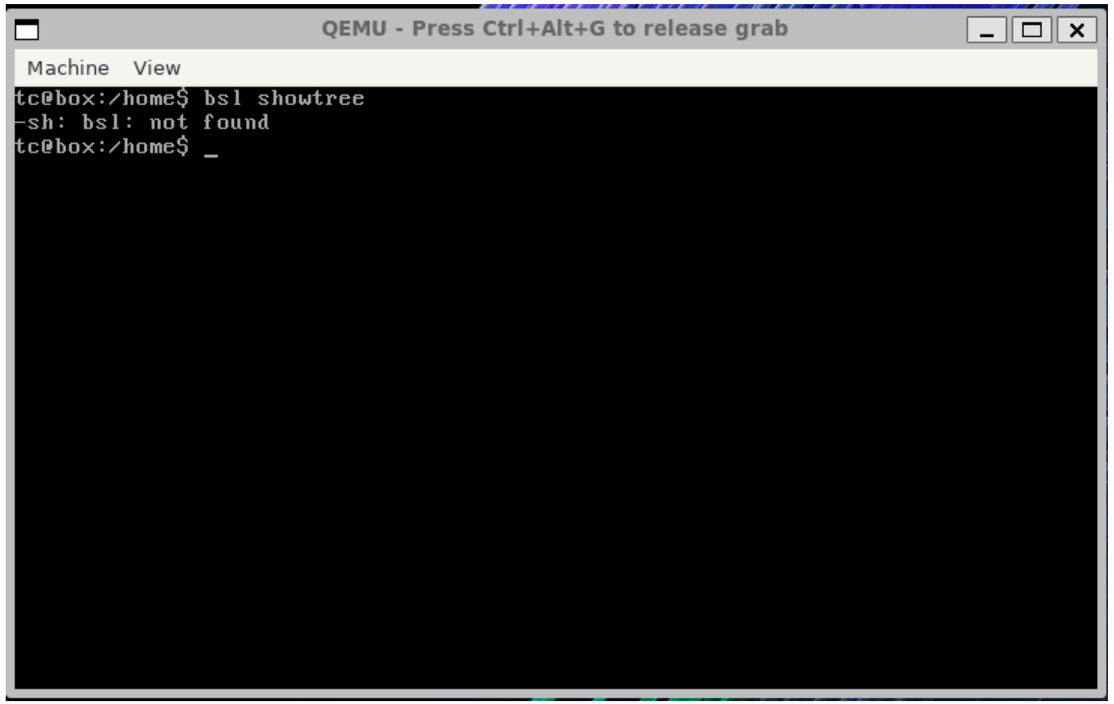


Added Nano Text Editor

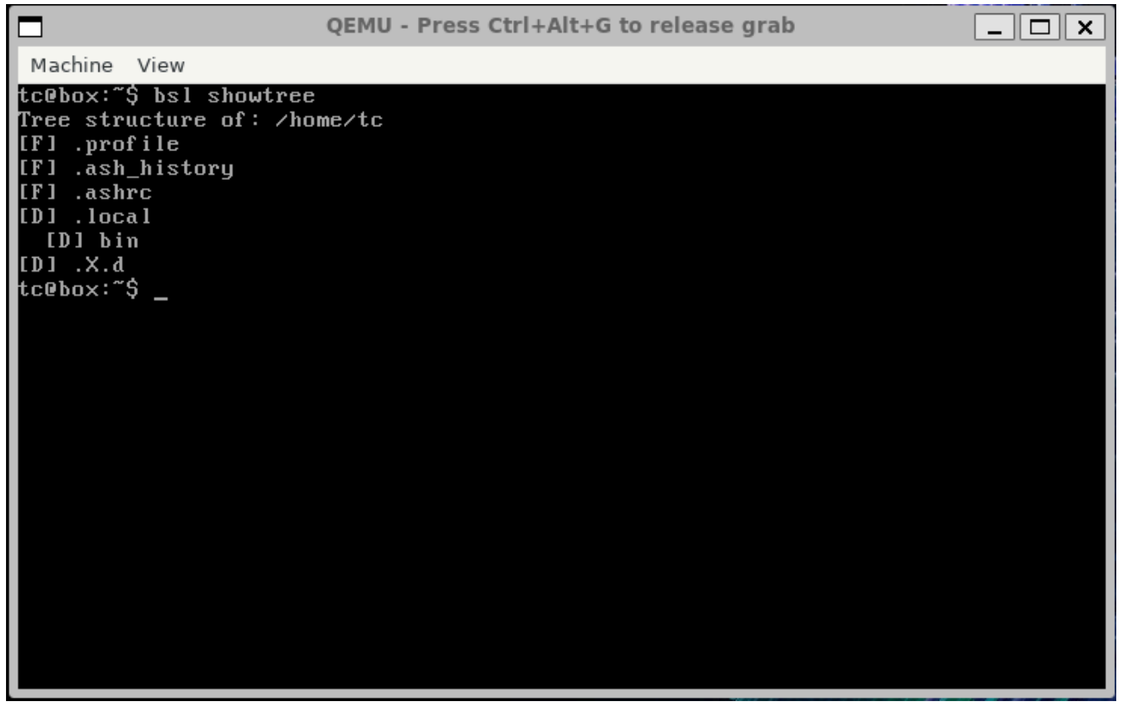
We remastered the CorePure64-14.0.iso of Tiny Core Linux to create a custom OS. This new ISO includes the Nano text editor by default for easier text editing. The modification ensures a lightweight system with built-in editing capabilities.

CHANGES WE MADE

Running default iso



Running modified iso

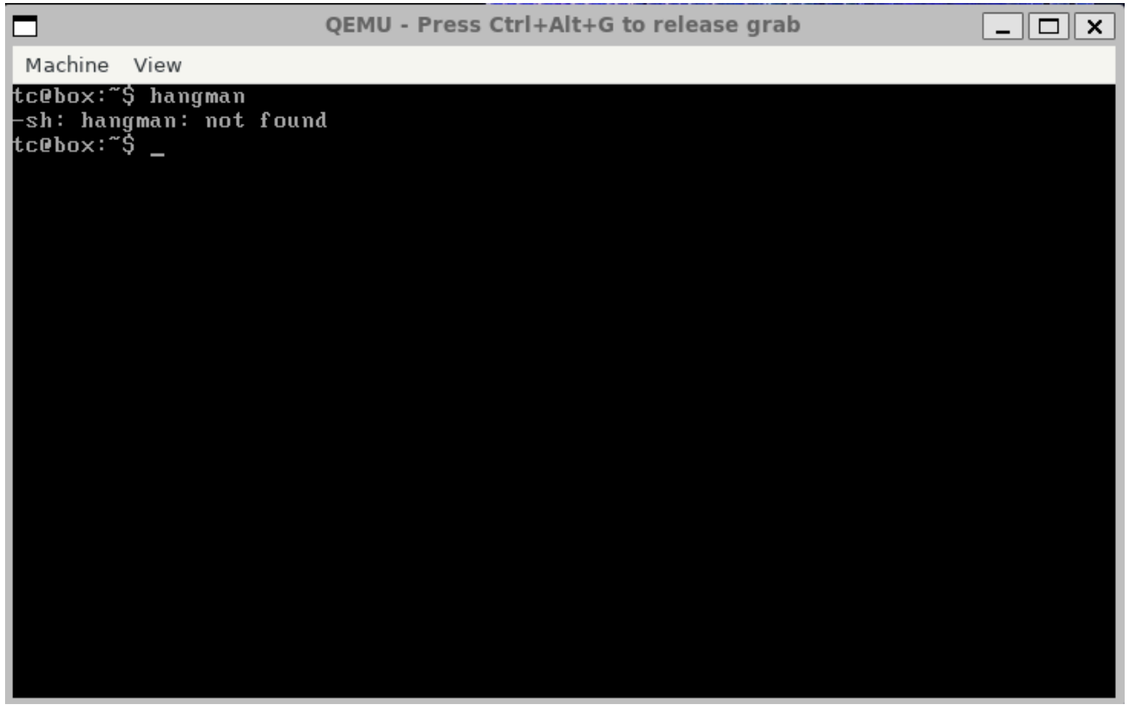


Added bsl program

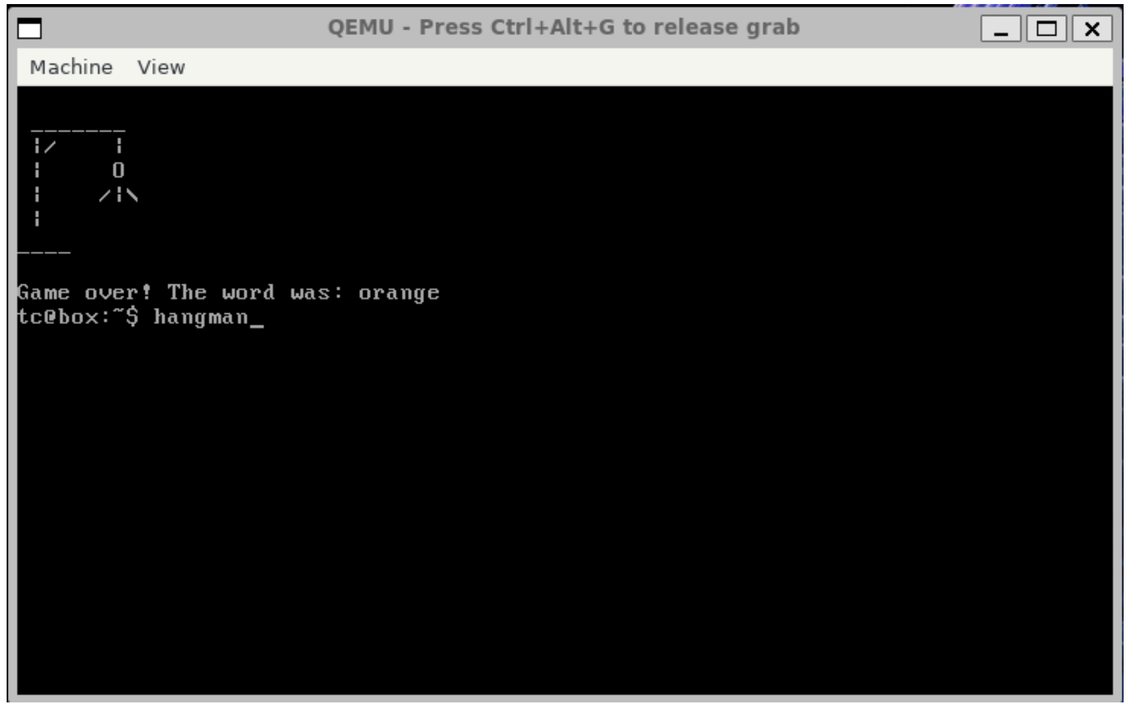
We also added the bsl showtree command, a custom implementation of the tree command, which was missing in Tiny Core Linux. This command provides a hierarchical view of directories and files. It enhances navigation and file management in the system

CHANGES WE MADE

Running default iso



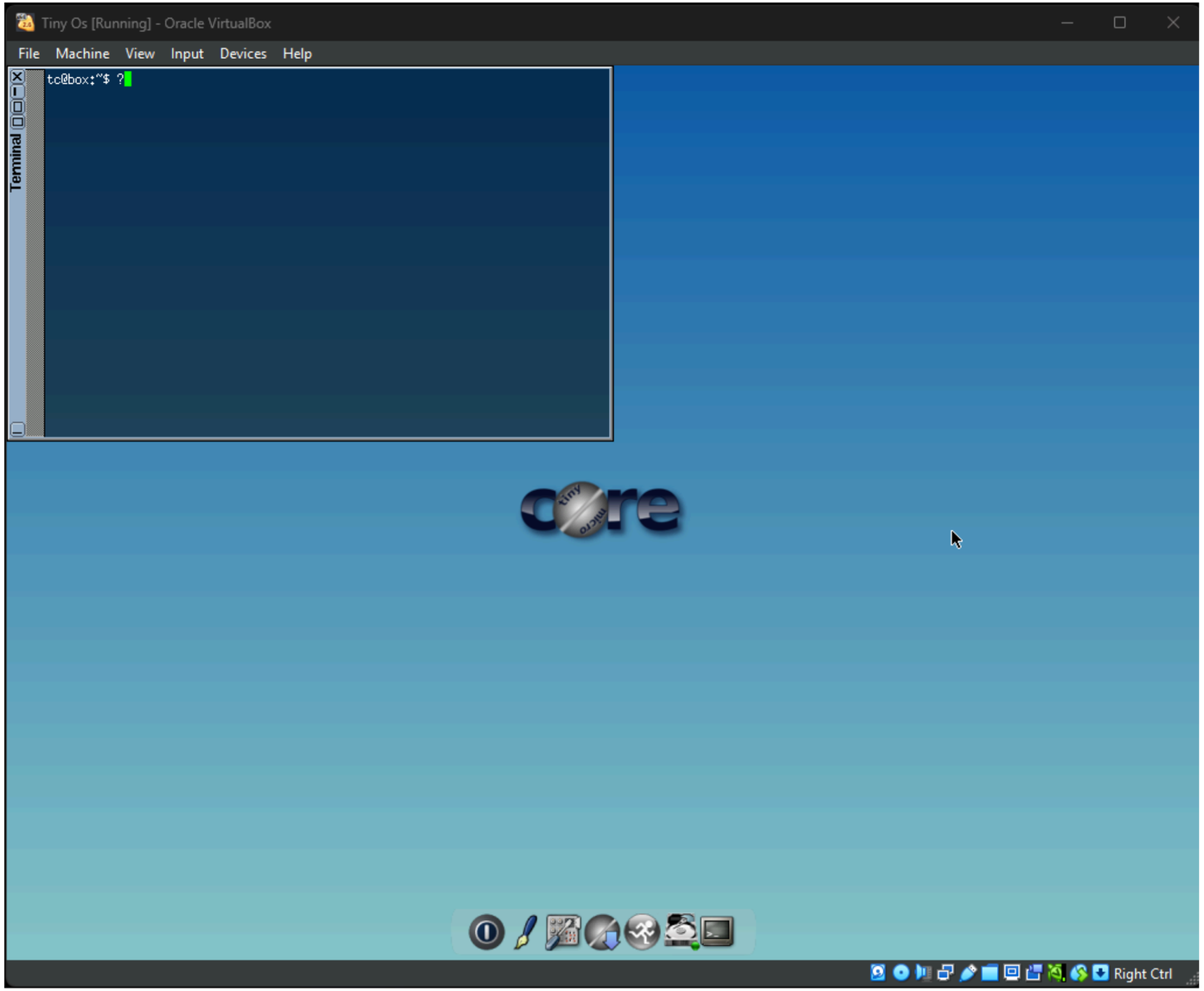
Running modified iso



Added Hangman Game

We added a Hangman game that can be played directly in the terminal. Users can start the game by typing hangman. This provides a fun, text-based gaming experience within the OS.

TINY CORE LINUX (GUI VERSION)



THANK YOU

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