



# BAHIR DAR UNIVERSITY

**BAHIR DAR INSTITUTE OF TECHNOLOGY**  
**Faculty of Computing Department of**  
**Software Engineering**

**Operating System and System Programing Project**  
**System Call Implemenation**

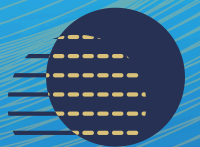
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## KNOPPIX

Submission Date: 24/04/2025 G.C

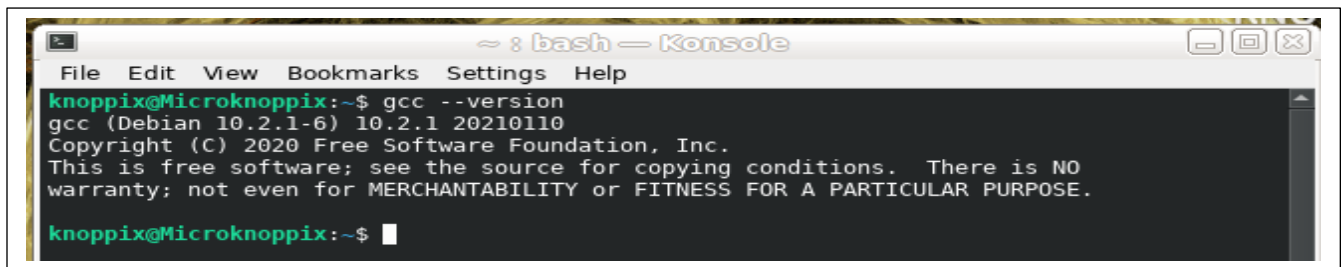


## System Call Implementation

System calls are essential interfaces between user-level applications and the operating system kernel. They allow programs to request low-level services such as file operations, process control, and communication directly from the OS. One such system call is `getppid()`, which returns the process ID of a program's parent process.

Understanding and implementing `getppid()` helped me explore how processes interact in a Linux environment and gave me practical insight into how the OS manages process hierarchies behind the scenes.

## Development Environment Setup (GCC Verification)



```
~ : bash — Konsole
File Edit View Bookmarks Settings Help
knoppix@Microknoppix:~$ gcc --version
gcc (Debian 10.2.1-6) 10.2.1 20210110
Copyright (C) 2020 Free Software Foundation, Inc.
This is free software; see the source for copying conditions. There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
knoppix@Microknoppix:~$
```

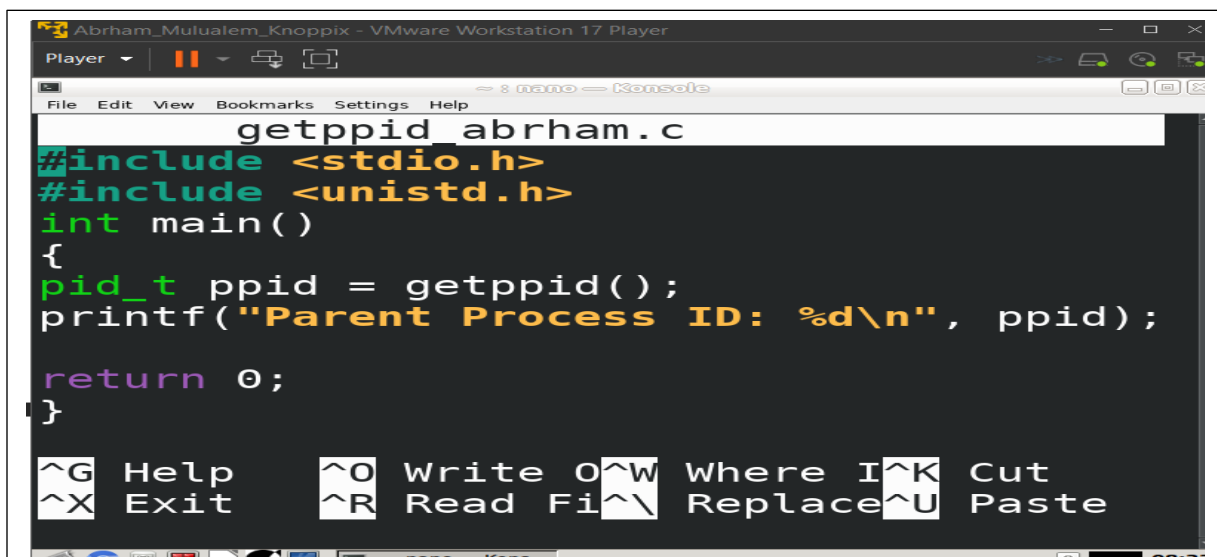
## Implementing `getppid()` System Call

Create a C File



```
knoppix@Microknoppix:~$ nano getppid_abrham.c
```

Write the C Program In the nano editor



```
Abraham_Muluaem_Knoppix - VMware Workstation 17 Player
Player
File Edit View Bookmarks Settings Help
getppid_abrham.c
#include <stdio.h>
#include <unistd.h>
int main()
{
    pid_t ppid = getppid();
    printf("Parent Process ID: %d\n", ppid);
    return 0;
}
^G Help      ^O Write O   ^W Where I   ^K Cut
^X Exit      ^R Read Fi  ^\ Replace  ^U Paste
```

## Compiling and Running the Program

### Compile the Program

```
knoppix@Microknoppix:~$ gcc -o getppid_abrham getppid_abrham.c
```

### Run the Program

```
knoppix@Microknoppix:~$ ./getppid_abrham  
Parent Process ID: 4051  
knoppix@Microknoppix:~$
```