**MULTI THREADED HANDLER FOR THE KEYBOARD INTERRUPT**

Project submitted to the

SRM University – AP, Andhra Pradesh

for the partial fulfillment of the requirements to award the degree of

## Bachelor of Technology/Master of Technology

In

## Computer Science and Engineering School of Engineering and Sciences

Submitted by

## Candidate Name (APXXXXXXXXXXX)



Under the Guidance of

## (Supervisor Name)

**SRM University–AP**

**Neerukonda, Mangalagiri, Guntur Andhra Pradesh – 522 240 [Month, Year]**

# Certificate

Date: 5/18/2023

This is to certify that the work present in this Project entitled “**multi-threaded handler for the keyboard interrupt**” has been carried out by **[Name of the Candidate]** under my/our supervision. The work is genuine, original, and suitable for submission to the SRM University – AP for the award of Bachelor of Technology/Master of Technology in **School of Engineering and Sciences**.

## Supervisor

(Signature)

Prof. / Dr. [Name] Designation,

Affiliation.

## Co-supervisor

(Signature)

Prof. / Dr. [Name] Designation,

Affiliation.

# AIM OF PROJECT:

# Implementation of multi-threaded handler for the keyboard interrupt

# DISCRIPTION:

A keyboard interrupt is a signal that is sent to a program when the user presses Ctrl+C. This signal can be used to interrupt a program that is running in the foreground. In a multi-threaded program, it is important to be able to handle keyboard interrupts in a way that does not affect the other threads. This can be done by using a global variable to signal the threads to exit. This project is a clone of real time systems keyboard interrupt handler which is written in c or objective c or embedded c but as for student understanding we made this code in python which is easy to understand the main concept of the handler and how the implementation need to be in any language.

**ROLES AND RESPONSIBILITIES:**

**Resources Management : (Team member name)**

(Team member ) collected information which is required to the ppt and report and helped in preparing ppt and report.

**Code Implementation: (Team member name)**

(Team member ) implemented python script to handle keyboard interrupt

Using some native modules which is available in python.

**Report and PPT Preparation: (Team member name)**

(Team member ) worked on ppt and report which is a refence of our project.

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**CODE:**

from time import sleep

from threading import Thread

from \_thread import interrupt\_main

import sys

def task():

    sleep(3)

    print('Interrupting main thread now')

    interrupt\_main()

thread = Thread(target=task)

thread.start()

try:

    while True:

        print('Main thread waiting...')

        sleep(0.5)

except KeyboardInterrupt:

    print('Main interrupted! Exiting.')

    sys.exit()

**EXPLANATION:**

Another thread may invoke this function, which by default raises a signal.This thread's main thread will get a SIGINT (interruption signal). When a user pushes Ctrl-C at the command prompt, this signal is sent.

# thread.interrupt\_main()

The main thread will break down and end if the SIGINT is not handled in the main thread. The procedure will come to an end if there are no active threads.

The main thread is capable of handling the SIGINT.

#\_ thread.interrupt\_main(signum=signal.SIGKILL)

he function will block for a moment by calling the time.sleep() function for three seconds. It will then report a message that it is interrupting the main thread, then calls the \_thread.interrupt\_main() function.

def task():

    sleep(3)

    print('Interrupting main thread now')

    interrupt\_main()

in the main thread we will create a new threading.Thread instance and configure it to execute the task() function. The thread can then be started by calling the start() function.

thread = Thread(target=task)

thread.start()

In the body of the try-except will block forever to simulate work, printing a message and sleeping for half a second each iteration.

The Keyboard Interrupt is handled by printing a message and terminating the thread with a call to the sys.exit() function.

**CONCLUSION:**

The Proposed python script is a clone of realistic keyboard interrupt handler this python script gives the clear understanding of how interrupt will be handled in real time systems

The main thread then loops, blocking for half a second at a time and reporting a message each iteration.

The new thread starts, blocking for three seconds. It then sends a SIGINT to the main thread and terminates.

The main thread receives the SIGINT signal which raises a KeyboardInterrupt

The KeyboardInterrupt is handled by reporting a message and exiting the main thread, which in turn terminates the program.

This demonstrates how a new thread can interrupt the main thread and how the main thread might expect and handle the interruption with a try-except pattern.

**REFERENCE:**

**GITHUB**:

We gone through so many repositories to collect the information regarding interrupt handlers and other thread concepts , we took some references for code like the main reference for choosing this code in python was by GitHub

**CHROME:**

Superfastpython.com helps us to understand the main theme of this project we got to know what is handlers and how to implement it a specific language and more .

**YOUTUBE:**

We referred YouTube to get clear vision of this type of interrupts and undertood about various concepts of multithreading systems