Question 1.2

Process Scheduling

A bash file called starting.sh opens up three directories A B and C and copies the uncompiled linux source code to these directories. It adds the .config file making the file ready for compilation.

QUES1.2 > $ starting.sh

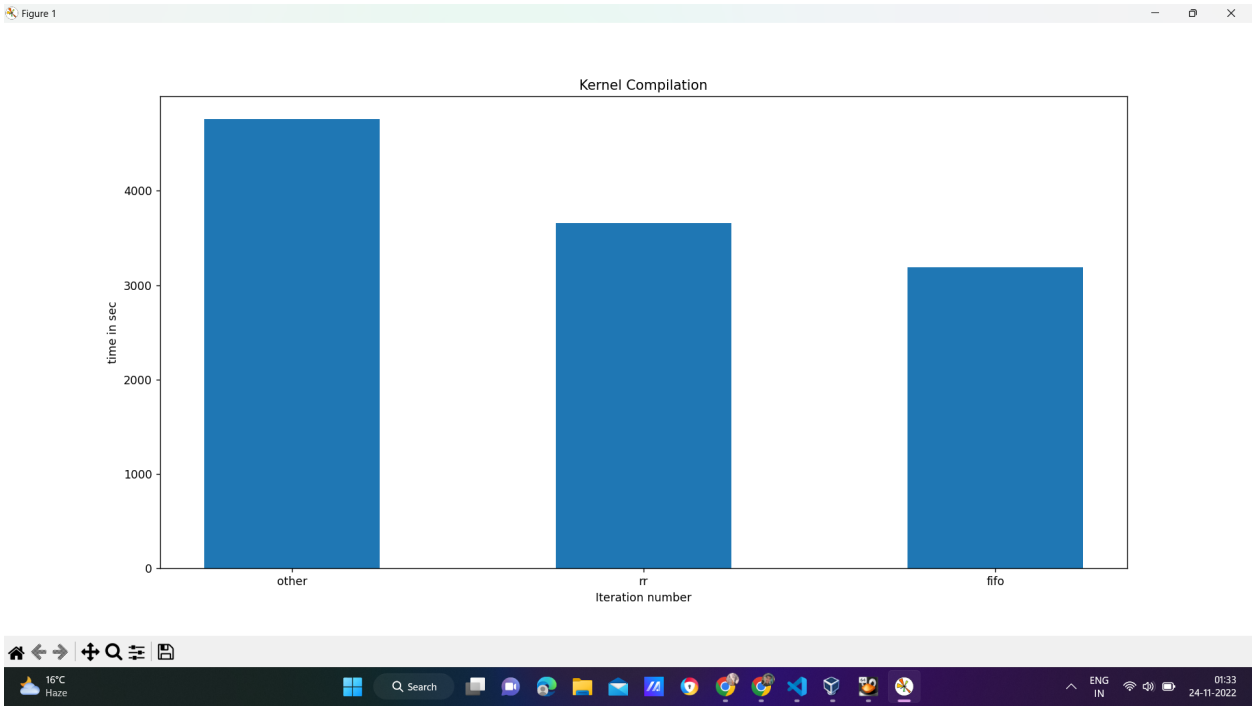
```
#! /bin/bash

cd
mkdir A
mkdir B
mkdir C
cp -r linux-5.19.9 A
cp -r linux-5.19.9 B
cp -r linux-5.19.9 C
cd A
cd linux-5.19.9
cp config-rev-9-gold .config
cd
cd B
cd linux-5.19.9
cp config-rev-9-gold .config
cd
cd C
cd linux-5.19.9
cp config-rev-9-gold .config
cd
```

Three processes are started using fork(). Each process runs a bash script to make the kernel. The first process is scheduled using SCHED_OTHER, second is SCHED_RR and third is SCHED_FIFO.
Forking structure is nested. Time calculation is started before fork and is stopped after WAITPID.

```
    perror("Error forking");
}
else if(pid1>0) {
    clock_gettime(CLOCK_REALTIME,&start2);
    pid2=fork();
    if(pid2==0){
        param.sched_priority=50;
        if(sched_setscheduler(pid_num,SCHED_RR,&param)!=0){
            perror("error scheduling");
        }
        if(execl("/home/sandy/assignment2/B.sh",NULL)==-1){
            perror("Incorrect Command");
        }
        exit(EXIT_FAILURE);
    }
    else if(pid2<0){
        perror("Error forking");
    }
    else if(pid2>0){
        clock_gettime(CLOCK_REALTIME,&start3);
        pid3=fork();
        if(pid3==0){
            param.sched_priority=50;
            if(sched_setscheduler(pid_num,SCHED_FIFO,&param)!=0){
                perror("error scheduling");
            }
            if(execl("/home/sandy/assignment2/C.sh",NULL)==-1){
                perror("Incorrect Command");
            }
            exit(EXIT_FAILURE);
        }
        else if(pid3<0){
            perror("Error forking");
        }
        else if(pid3>0){
```

The result is such that SCHED_OTHER takes maximum time at around 4700 seconds. RR takes around 3600 seconds while FIFO takes only 3100 seconds.



This is because SCHED_FIFO and SCHED_RR are real time scheduling policies which pre empt every other task. Fifo does not have a time slice so it is the fastest. RR has a time slice so it is slightly slower. Other on the hand is the default scheduling policy that schedules processes for a time slice depending on other processes.