UECS20CS254 - Operating Systems

Unit-2 Programming exercises

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Q1. Implement pipe operator in C with the following functionality:
- The parent process reads in a file "input.txt" and redirects the output to the pipe
- The child process must read the contents of the file and perform a word count

CODE :

```c
#include<stdio.h>
#include<string.h>
#include<unistd.h>
#include<sys/wait.h>
#include<sys/types.h>

#define BUF_SIZE 25
#define Read_END 0
#define WRITE_END 1

int main()
{
    char Read[BUF_SIZE]="";
    int fd[2];
    pid_t pid;

    if(pipe(fd) == -1)
    {
        printf("Pipe Failed\n");
        return 1;
    }
    pid = fork();
```

```c
        if(pid>0)
        {
                FILE *fp;
                fp = fopen("input.txt","r");
                char buff[20],ch;
                int i=0;
                while((ch=fgetc(fp))!=EOF)
                {
                    buff[i]=ch;
                    i++;
                }
                buff[i]=0;
                close(fd[Read_END]);
                write(fd[WRITE_END],buff,strlen(buff)+1);
                close(fd[WRITE_END]);
                wait(NULL);
                fclose(fp);
        }
        else if(pid==0)
        {
                int cnt = 0;
                close(fd[WRITE_END]);
                read(fd[Read_END],Read,BUF_SIZE);
                printf("%s\n",Read);
                char *token = strtok(Read," ");


                while(token!=NULL)
                {
                        cnt++;
                        token = strtok(NULL," ");
                }
                printf("child process read word count: %d\n",cnt);
                close(fd[Read_END]);
        }
        else
        {
                 printf("Fork Failed\n");
                 return 1;
        }
}
```
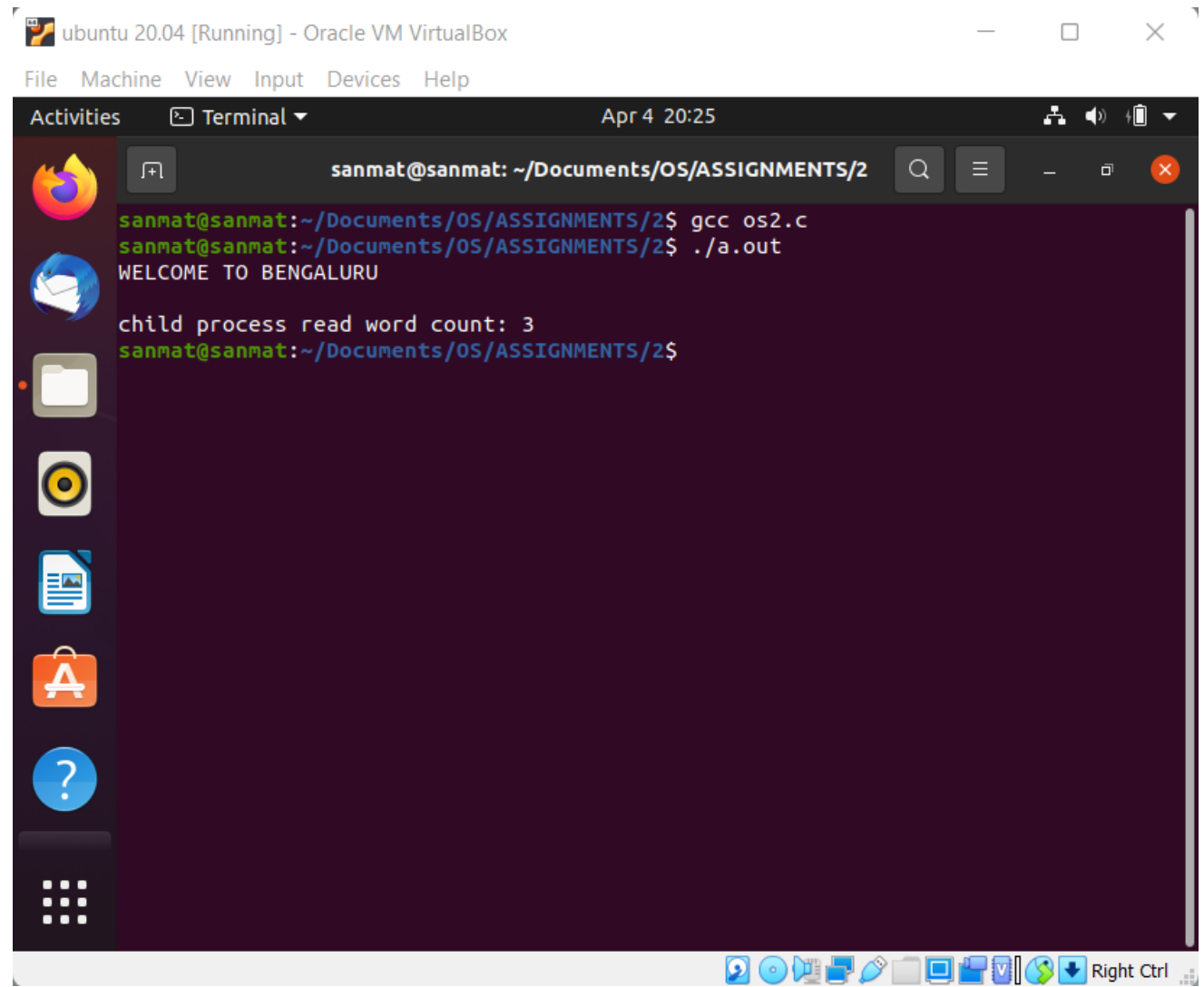
INPUT TEXT FILE :

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OUTPUT :