

OPERATING SYSTEM

Hands-on Session Submission #2

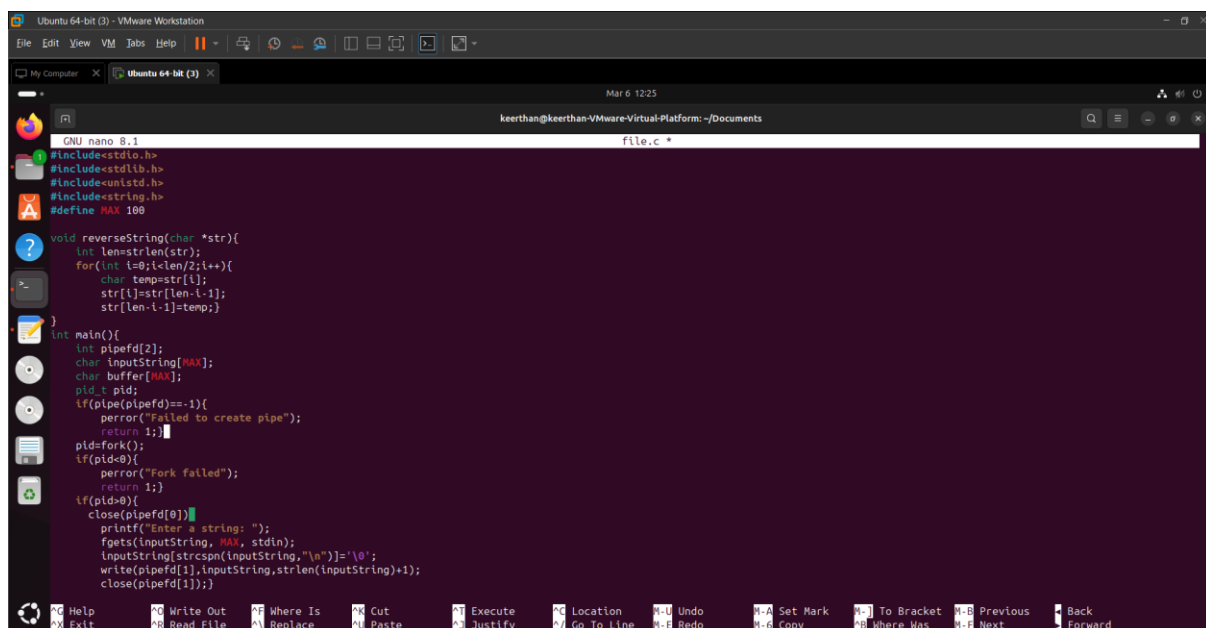
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Q1. Using pipes, reverse a string.

- One process takes in the string as input and writes it to a pipe
- The other process reads from the pipe and reverses the string.

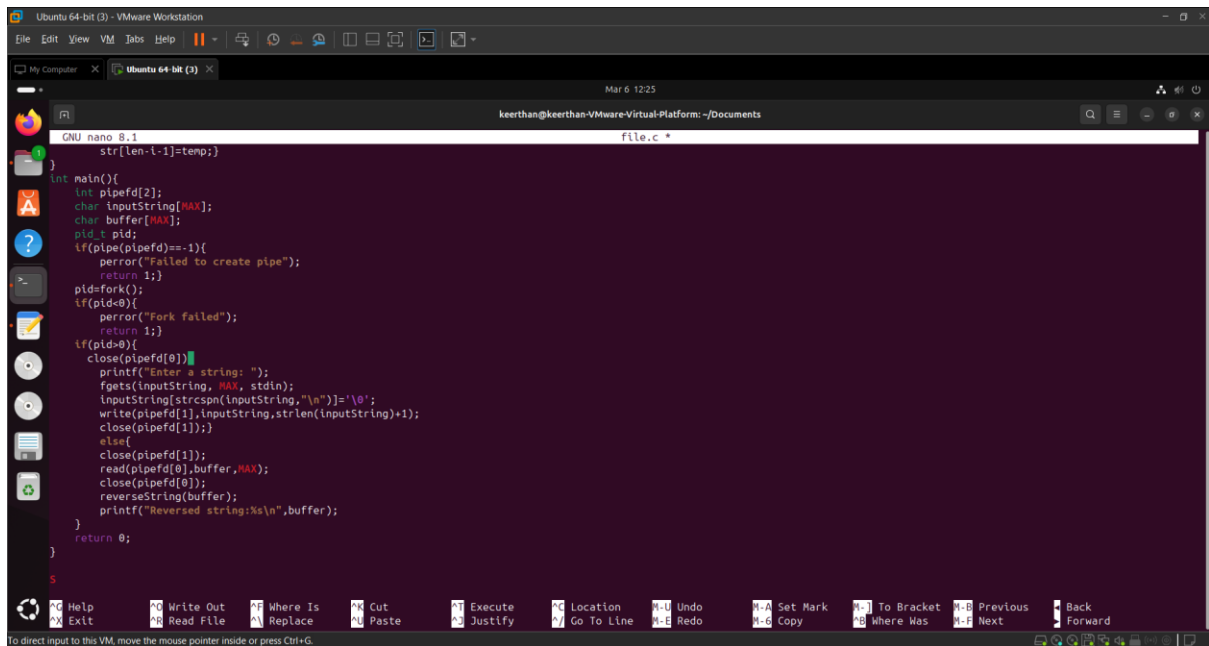
CODE:



```
GNU nano 8.1 file.c
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<string.h>
#define MAX 100

void reverseString(char *str){
    int len=strlen(str);
    for(int i=0;i<len/2;i++){
        char temp=str[i];
        str[i]=str[len-1-i];
        str[len-1-i]=temp;
    }
}

int main(){
    int pipefd[2];
    char inputString[MAX];
    char buffer[MAX];
    pid_t pid;
    if(pipe(pipefd)==-1){
        perror("Failed to create pipe");
        return 1;
    }
    pid=fork();
    if(pid<0){
        perror("Fork failed");
        return 1;
    }
    if(pid==0){
        close(pipefd[0]);
        printf("Enter a string: ");
        fgets(inputString, MAX, stdin);
        inputString[strcspn(inputString, "\n")]='\0';
        write(pipefd[1], inputString, strlen(inputString)+1);
        close(pipefd[1]);
    }
}
```



```
GNU nano 8.1 file.c
str[len-1]=temp;
}
int main(){
    int pipefd[2];
    char inputString[MAX];
    char buffer[MAX];
    pid_t pid;
    if(pipe(pipefd)==-1){
        perror("Failed to create pipe");
        return 1;
    }
    pid=fork();
    if(pid<0){
        perror("Fork failed");
        return 1;
    }
    if(pid==0){
        close(pipefd[0]);
        printf("Enter a string: ");
        fgets(inputString, MAX, stdin);
        inputString[strcspn(inputString, "\n")]='\0';
        write(pipefd[1], inputString, strlen(inputString)+1);
        close(pipefd[1]);
    }
    else{
        close(pipefd[1]);
        read(pipefd[0], buffer, MAX);
        close(pipefd[0]);
        reverseString(buffer);
        printf("Reversed string: %s\n", buffer);
    }
    return 0;
}
```

```
#include<stdio.h>
```

```
#include<stdlib.h>
```

```
#include<unistd.h>
```

```
#include<string.h>
```

```
#define MAX 100
```

```
void reverseString(char *str){
```

```
    int len=strlen(str);
```

```
    for(int i=0;i<len/2;i++){
```

```
        char temp=str[i];
```

```
        str[i]=str[len-i-1];
```

```
        str[len-i-1]=temp;}
```

```
}
```

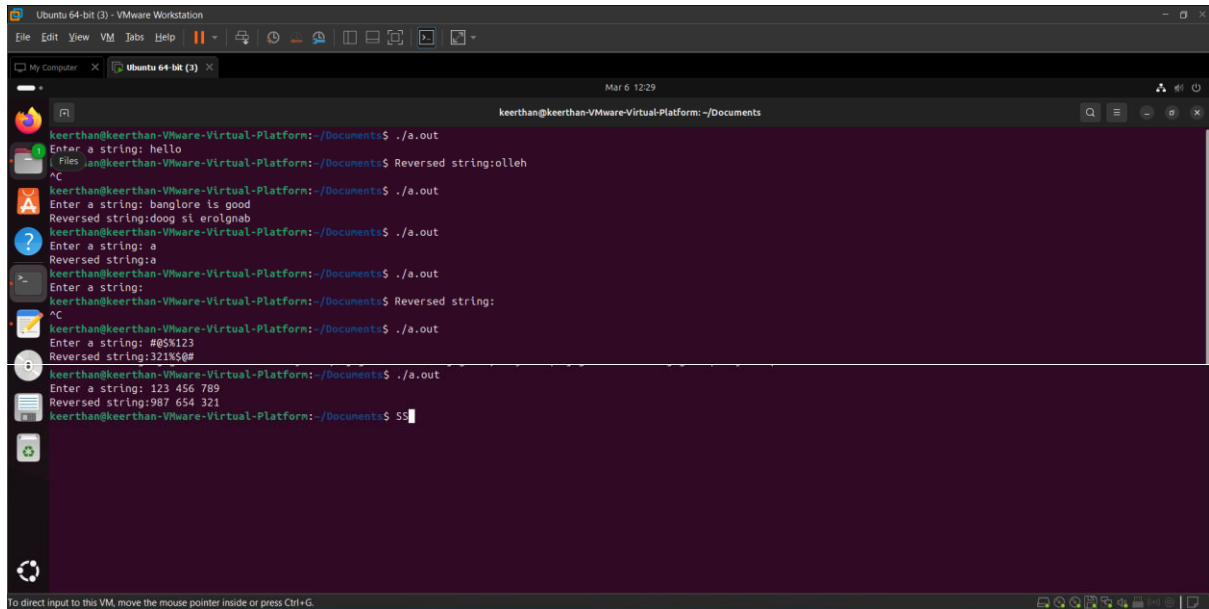
```
int main(){
```

```
    int pipefd[2];
```

```
char inputString[MAX];  
  
char buffer[MAX];  
  
pid_t pid;  
  
if(pipe(pipefd)==-1){  
    perror("Failed to create pipe");  
    return 1;}  
  
pid=fork();  
  
if(pid<0){  
    perror("Fork failed");  
    return 1;}  
  
if(pid>0){  
    close(pipefd[0]);  
  
    printf("Enter a string: ");  
  
    fgets(inputString, MAX, stdin);  
  
    inputString[strcspn(inputString, "\n")] = '\0';  
  
    write(pipefd[1], inputString, strlen(inputString)+1);  
  
    close(pipefd[1]);  
  
    else{  
        close(pipefd[1]);  
  
        read(pipefd[0], buffer, MAX);  
  
        close(pipefd[0]);  
  
        reverseString(buffer);  
  
        printf("Reversed string:%s\n", buffer);
```

```
}  
  
return 0;  
  
}
```

OUTPUT:



The screenshot shows a terminal window titled "Ubuntu 64-bit (3) - VMware Workstation". The terminal prompt is "keerthan@keerthan-VMware-Virtual-Platform: ~/Documents". The user enters the command "cat a.out", which outputs "Enter a string: hello". The user then enters "Reversed string:olleh". The user enters the command "cat a.out", which outputs "Enter a string: banglore is good". The user then enters "Reversed string:doog si erolgnab". The user enters the command "cat a.out", which outputs "Enter a string: a". The user then enters "Reversed string:a". The user enters the command "cat a.out", which outputs "Enter a string:". The user then enters "Reversed string:". The user enters the command "cat a.out", which outputs "Enter a string: #S%123". The user then enters "Reversed string:321%\$#@". The user enters the command "cat a.out", which outputs "Enter a string: 123 456 789". The user then enters "Reversed string:987 654 321". The user enters the command "cat a.out", which outputs "Enter a string: 58".

```
keerthan@keerthan-VMware-Virtual-Platform: ~/Documents  
keerthan@keerthan-VMware-Virtual-Platform:~/Documents$ ./a.out  
Enter a string: hello  
Reversed string:olleh  
^C  
keerthan@keerthan-VMware-Virtual-Platform:~/Documents$ ./a.out  
Enter a string: banglore is good  
Reversed string:doog si erolgnab  
keerthan@keerthan-VMware-Virtual-Platform:~/Documents$ ./a.out  
Enter a string: a  
Reversed string:a  
keerthan@keerthan-VMware-Virtual-Platform:~/Documents$ ./a.out  
Enter a string:  
Reversed string:  
^C  
keerthan@keerthan-VMware-Virtual-Platform:~/Documents$ ./a.out  
Enter a string: #S%123  
Reversed string:321%$#@  
keerthan@keerthan-VMware-Virtual-Platform:~/Documents$ ./a.out  
Enter a string: 123 456 789  
Reversed string:987 654 321  
keerthan@keerthan-VMware-Virtual-Platform:~/Documents$ 58
```