



اُنِيْوَرْسِيْٓتِيْ تِكْنُوْلُوْجِيْ مَآرَا
UNIVERSITI
TEKNOLOGI
MARA

**FACULTY OF SCIENCE COMPUTER AND
MATHEMATICS**

**BACHELOR OF COMPUTER SCIENCE (HONS)
NETWORKS**

**NETWORK PROGRAMMING
(ITT 440)**

INDIVIDUAL ASSIGNMENT

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CLASS:

CS255 4C

Instructions:

You are required to create a fork program in C programming language. You are free to create

as many child process as you wish for this program. You are free to create parent message

and interrupt message. Your program should be capable of:

1. Forking into multiple child and there should be a kind of message passing from parent

to child(s) using pipe. (3 marks)

2. Parent process should get the message from user (keyboard entry). (3 marks)

3. Child(s) process should display the message (on screen / terminal). (3 marks)

4. If interrupt is detected from keyboard (Ctrl + C), the program should show appropriate

interrupt message. (3 marks)

Coding :

```
GNU nano 6.2                                440assignment.c
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<signal.h>

#define MAX_CHILDREN 10
#define BUFFER_SIZE 1024

int num_children = 0;
int children[MAX_CHILDREN];

void handle_interrupt(int signal){
    printf("\nInterrupt signal received. Exiting..\n");
    for (int i = 0; i < num_children; i++){
        kill(children[i], SIGTERM);
    }
    exit(0);
}

int main(){
    int pipefd[2];
    char buffer[BUFFER_SIZE];

    if (pipe(pipefd) == -1){
        perror("pipe");
        exit(EXIT_FAILURE);
    }

    signal(SIGINT, handle_interrupt);

    while (1){
        printf("Enter message: ");
        fgets(buffer, BUFFER_SIZE, stdin);

        [ Read 58 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^_ Replace    ^U Paste      ^J Justify    ^_ Go To Line M-E Redo
```

```
GNU nano 6.2                                440assignment.c
    }

    signal(SIGINT, handle_interrupt);

    while (1){
        printf("Enter message: ");
        fgets(buffer, BUFFER_SIZE, stdin);

        for (int i=0; i < num_children; i++){
            write(pipefd[1], buffer, BUFFER_SIZE);
        }
        if (fork() == 0){
            close(pipefd[1]);

            while (1){
                if(read(pipefd[0], buffer, BUFFER_SIZE) > 0){
                    printf("Child %d received message: %s", getpid(), buffer);
                }
            }
            exit(0);
        }else{
            close(pipefd[0]);
            children[num_children]=getpid();
            num_children++;

            if (num_children >= MAX_CHILDREN){
                break;
            }
        }
    }
    return 0;
}

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^_ Replace    ^U Paste      ^J Justify    ^_ Go To Line M-E Redo
```

Output : -Error

```
herbert@herbert:~$ gcc 440assignment.c
440assignment.c:9:9: error: expected '=', ',', ';', 'asm' or '__attribute__' before 'children'
   9 | int num children = 0;
     |          ^
440assignment.c: In function 'handle_interrupt':
440assignment.c:14:29: error: 'num_children' undeclared (first use in this function); did you mean c
children'?
   14 |         for (int i = 0; i < num_children; i++){
     |                             ^
     |                             children
440assignment.c:14:29: note: each undeclared identifier is reported only once for each function it a
ppears in
440assignment.c: In function 'main':
440assignment.c:34:35: error: 'num_children' undeclared (first use in this function); did you mean c
children'?
   34 |         for (int i=0; i < num_children; i++){
     |                             ^
     |                             children
440assignment.c:38:40: error: expected ')' before ';' token
   38 |         close(pipefd[1];
     |                ^
     |                )
440assignment.c:45:33: error: expected ';' before '}' token
   45 |         exit(0);
     |                ^
     |                ;
   46 |     }else{
     |     ~
herbert@herbert:~$
```

Github link : https://github.com/itsmeherbert/Individual_assignment.git