



اَوْنُوْرُسِيْتِيْ تِيْكْنُوْلُوْجِيْ مَآرَا
UNIVERSITI
TEKNOLOGI
MARA

**CS255 BACHELOR OF COMPUTER SCIENCE (HONS.) COMPUTER
NETWORKS**

**ITT440 NETWORK PROGRAMMING
INDIVIDUAL ASSIGNMENT (10%)**

Prepared By:

Student ID	Name	Class
2022815738	MUHAMMAD AIMAN HAKIM BIN ALISAMUDDIN	CS2554C

Prepared For:

DR. MOHD IZANI BIN MOHAMED RAWI

SUBMISSION DATE

21 April 2023

Table of Contents

INTRODUCTION.....	3
FORK, CHILD, and PARENT PROCESS	3
Multiple child program using loop	4
USING PIPE IN C.....	5
SIGNAL INTERRUPTION HANDLER.....	7
GITHUB	8
REFERENCES	8

INTRODUCTION

Referring to Lab 2, 3 and certain website for completing this assignment using C language.

FORK, CHILD, and PARENT PROCESS

```
switch (pid = fork()) {  
    case 0:          /* a fork returns 0 to the child */  
        printf("I am the child process: pid=%d\n", getpid());  
        break;  
  
    default: /* a fork returns a pid to the parent */  
        printf("I am the parent process: pid=%d, child pid=%d\n", getpid(), pid);  
        break;  
}
```

Appendix 1

```
void childTask() {  
    printf("Salam, saya anak tau\n");  
}  
  
void parentTask() {  
    printf("Dan saya adalah bapaknya n");  
}  
  
int main(void) {  
    pid_t pid = fork();  
    if (pid == 0) {  
        childTask();  
        exit(EXIT_SUCCESS);  
    }  
    else if (pid > 0) {  
        wait(NULL);  
        parentTask();  
    }  
}
```

Appendix 2

Multiple child program using loop

```
int main(void) {
    for(int i = 1; i < 13; i++) {
        pid_t pid = fork();

        if(pid == 0) {
            printf("Child process => PPID=%d, PID=%d\n", getppid(), getpid());
            exit(0);
        }
        else {
            printf("Parent process => PID=%d\n", getpid());
            printf("waiting for child processes to finish...\n");
            wait(NULL);
            printf("child process finished.\n");
        }
    }
}
```

Appendix 3

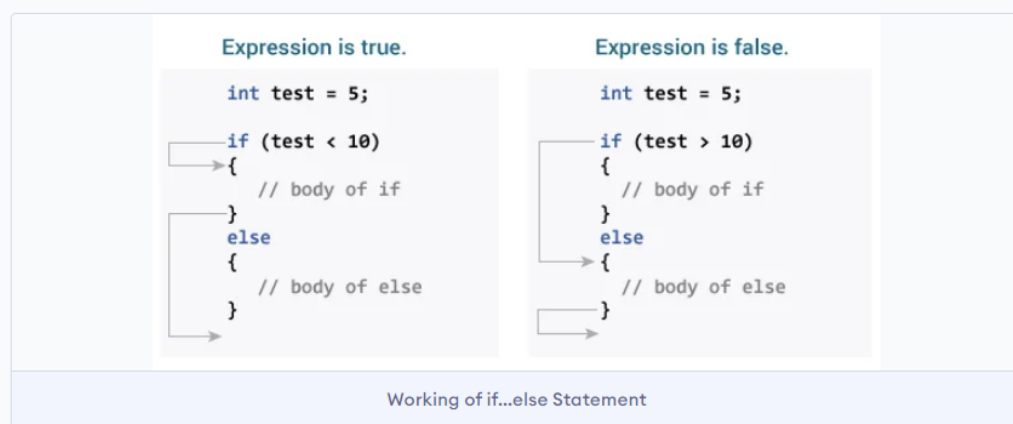
How if...else statement works?

If the test expression is evaluated to true,

- statements inside the body of `if` are executed.
- statements inside the body of `else` are skipped from execution.

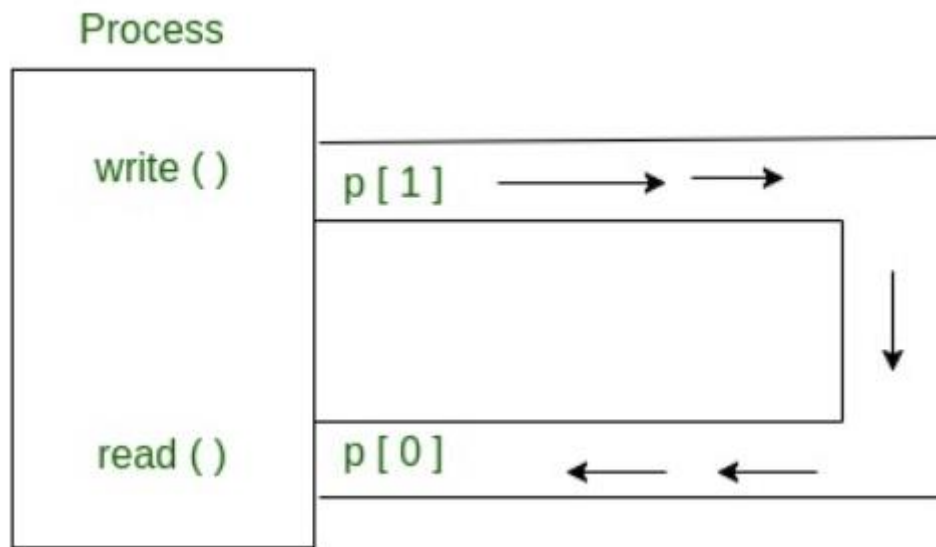
If the test expression is evaluated to false,

- statements inside the body of `else` are executed
- statements inside the body of `if` are skipped from execution.



Appendix 4

USING PIPE IN C



Appendix 5

```
int main(void) {
    int pipefds[2];
    int buffer;

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

    int nombor = 22;

    printf("writing a number to pipe...\n");
    write(pipefds[1], &nombor, sizeof(nombor));
    printf("Done.\n\n");

    printf("Reading a number from pipe...\n");
    read(pipefds[0], &buffer, sizeof(buffer));
    printf("Done.\n\n");

    printf("Number from pipe: %d\n", buffer);
}
```

Appendix 6

```

int main(void) {
    while(1) {
        int pipefds[2];
        char pin[PIN_LENGTH + 1];
        char buffer[PIN_LENGTH + 1];

        pipe(pipefds);

        pid_t pid = fork();

        if(pid == 0) {
            getPIN(pin); // generate PIN
            close(pipefds[0]); // close read fd
            write(pipefds[1], pin, PIN_LENGTH + 1); // write PIN to pipe

            printf("Generating PIN in child and sending to parent...\n");

            sleep(PIN_WAIT_INTERVAL); // delaying PIN generation
            intentionally.

            exit(EXIT_SUCCESS);
        }

        if(pid > 0) {
            wait(NULL); // waiting for child to finish

            close(pipefds[1]); // close write fd
            read(pipefds[0], buffer, PIN_LENGTH + 1); // read PIN from pipe
            close(pipefds[0]); // close read fd
            printf("Parent received PIN '%s' from child.\n\n", buffer);
        }
    }
}

```

Appendix 7

SIGNAL INTERRUPTION HANDLER

```
void sigint_handler(int sig);

char s[200];

if (signal(SIGINT, sigint_handler) == SIG_ERR){
    perror("signal");
    exit(1);
}
```

Appendix 8

Pending Signals

31	30	29	28	...	3	2	1	0
0	0	0	0	...	0	0	0	0

Blocked Signals

31	30	29	28	...	3	2	1	0
0	0	0	0	...	0	1	0	0

Appendix 9

GITHUB

<https://github.com/MyNameIsInUsed/Individual-Assignment.git>

REFERENCES

ITT440 LAB 2 Assignment

ITT440 LAB 3 Assignment

C if...else Statement. (n.d.). <https://www.programiz.com/c-programming/c-if-else-statement>

C Tutorial. (n.d.). <https://www.w3schools.com/c/index.php>

GeeksforGeeks. (2019). pipe System call. GeeksforGeeks.

<https://www.geeksforgeeks.org/pipe-system-call/>

GeeksforGeeks. (2018). Signals in C language. GeeksforGeeks.

<https://www.geeksforgeeks.org/signals-c-language/>