

Conditional : Switch

WHAT IS SWITCH?

Switch is a great replacement to long else if constructs.

Example:

```
int x = 2;

if (x == 1)
    printf("x is 1");
else if(x == 2)
    printf("x is 2");
else if(x == 3)
    printf("x is 3");
else
    printf("x is a number
other than 1, 2 and 3");
```

```
int x = 2;

switch(x)
{
    case 1: printf("x is 1");
            break;
    case 2: printf("x is 2");
            break;
    case 3: printf("x is 3");
            break;
    default: printf("x is a
number other than 1, 2, and 3");
            break;
}
```

```
int x = 2;
```

```
switch(x)
{
    case 1: printf("x is 1");
            break;
    case 2: printf("x is 2");
            break;
    case 3: printf("x is 3");
            break;
    default: printf("x is a
number other than 1, 2, and 3");
            break;
}
```

Checks if $x == 1$

Suppose $x == 1$ condition is satisfied and there is no **break** after `printf` then subsequent expression will also get evaluated until we reach the next **break**.

If none of the cases are satisfied then default will be executed.
Default is optional.

FACTS RELATED TO SWITCH

- 1 You are not allowed to add duplicate cases.

```
int main() {  
    int x = 1;  
    switch(x)  
    {  
        case 1: printf("x is 1");  
                break;  
        case 1: printf("x is 1");  
                break;  
        case 2: printf("x is 2");  
                break;  
    }
```

Output:

```
prog.c:9:6: error: duplicate case value  
        case 1: printf("x is 1");  
        ^  
prog.c:7:6: error: previously used here  
        case 1: printf("x is 1");
```

FACTS RELATED TO SWITCH

2

Only those expressions are allowed in switch which results in an integral constant value.

ALLOWED

```
int main() {  
    int a = 1, b = 2, c = 3;  
    switch(a+b*c)  
    {  
        case 1: printf("choice 1");  
                break;  
        case 2: printf("choice 2");  
                break;  
        default: printf("default");  
                break;  
    }  
}
```

Output:

default

NOT ALLOWED

```
int main() {  
    float a = 1.15, b = 2.0, c = 3.0;  
    switch(a+b*c)  
    {  
        case 1: printf("choice 1");  
                break;  
        case 2: printf("choice 2");  
                break;  
        default: printf("default");  
                break;  
    }  
}
```

```
prog.c: In function 'main':  
prog.c:5:9: error: switch quantity not an integer  
    switch(a+b*c)  
        ^
```


FACTS RELATED TO SWITCH

- ③ Float value is not allowed as a constant value in **case label**. Only integer constants/constant expressions are allowed in case label.

NOT ALLOWED

```
int main() {  
    float x = 3.14;  
    switch(x)  
    {  
        case 3.14: printf("x is 3.14");  
            break;  
        case 1.1: printf("x is 1.14");  
            break;  
        case 2: printf("x is 2");  
            break;  
    }  
}
```

```
prog.c:7:6: error: case label does not reduce to an integer constant  
    case 3.14: printf("x is 3.14");  
      ^  
prog.c:9:6: error: case label does not reduce to an integer constant  
    case 1.1: printf("x is 1.14");
```

ALLOWED

```
int main() {  
    int x = 23;  
    switch(x)  
    {  
        case 3+3: printf("choice 1");  
            break;  
        case 3+4*5: printf("choice 2");  
            break;  
        default: printf("default");  
            break;  
    }  
}
```

choice 2

FACTS RELATED TO SWITCH

4

Variable expressions are not allowed in case labels. Although macros are allowed.

```
int main() {  
    int x = 2, y = 2, z = 23;  
    switch(x)  
    {  
        case y: printf("Number is 2");  
            break;  
        case z: printf("Number is 23");  
            break;  
        default: printf("default case");  
            break;  
    }  
}
```

```
prog.c:7:6: error: case label does not reduce to an integer constant  
    case y: printf("Number is 2");  
      ^
```

```
prog.c:9:6: error: case label does not reduce to an integer constant  
    case z: printf("Number is 23");
```

FACTS RELATED TO SWITCH

4

Variable expressions are not allowed in case labels. Although macros are allowed.

```
#include <stdio.h>
#define y 2
#define z 23

int main() {
    int x = 2;
    switch(x)
    {
        case y: printf("Number is 2");
                break;
        case z: printf("Number is 23");
                break;
        default: printf("default case");
                break;
    }
}
```

Output:

Number is 2

FACTS RELATED TO SWITCH

- ⑤ Default can be placed anywhere inside switch. It will still get evaluated if no match is found.

```
int main() {  
    int x = 2;  
    switch(x)  
    {  
        default: printf("default case");  
        break;  
        case 1: printf("Number is 1");  
        break;  
        case 2: printf("Number is 2");  
        break;  
    }  
}
```

Output:

Number is 2

exercise...

Conditional : Nested IF

```
If(kondisi){  
    statement;  
    if(kondisi){  
        statement;  
    }  
    ...  
}  
else{  
    statement;  
}
```

nested if
if dalam if

Buatlah program untuk menentukan jenis sebuah bilangan :
positif ganjil, positif genap, negative genap, negative ganjil dan nol!

```
Int bilangan = -2;

if(bilangan < 0){
    if(bilangan %2 == 0)
        printf("negative genap");
    else
        printf("negative ganjil");
}else if(bilangan > 0){
    if(bilangan %2 == 0)
        printf("positive genap");
    else
        printf("positive ganjil");
}else{
    printf("nol");
}
```

exercise...