

# Practice 09. Structures

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# Project Guideline 03

- The structures are used to make compound data types when the data is complicated.

```
typedef struct {  
    char board[4][3];  
    char my_hand[8];  
    char en_hand[8];  
} State;
```

```
typedef struct {  
    int x;  
    int y;  
    int dead;  
} Coord;
```

```
typedef struct {  
    int type;  
    char piece;  
    Coord from;  
    Coord to;  
} Mov;
```

# Project Guideline 03

- The structures make the code readable.

```
void read_game(State * state);  
  
void print_coord(int x, int y);  
  
int get_giraffe_movs(State * state, Mov movs[]);  
  
int get_giraffe_coords(State * state, Coord coords[]);  
  
void print_movs(State * state, Mov movs[], int n);  
  
int is_out(int x, int y);
```

# Project Guideline 03

- Instead of brute force approach, use lot of functions even when the code is short.

```
for (i = 0; i < 4; i++)
{
    int nx = x + dx[i];
    int ny = y + dy[i];

    if (nx < 0 || nx > 2 || ny < 0 || ny > 3)
        continue;

    ...
}
```

```
for (i = 0; i < 4; i++)
{
    int nx = x + dx[i];
    int ny = y + dy[i];

    if (is_out(nx, ny))
        continue;

    ...
}
```

# Project Guideline 03

```
printf("%c ", piece);  
printf("%c%c ", from.x + 'A', from.y + '1');  
printf("%c%c\n", to.x + 'A', to.y + '1');
```

```
printf("%c ", piece);  
print_coord(from.x, from.y);  
printf(" ");  
print_coord(to.x, to.y);  
printf("\n");
```

# Project Guideline 03

- If you want to make the function that returns an array of something, passing an array as a parameter is recommended.

```
int main()
{
    int f[100];
    get_factorials(100, f);
}

void get_factorials(int n, int fact[])
{
    int i;
    if (n <= 0)
        return;

    f[0] = 1;
    for (i = 1; i < n; i++)
        f[i] = i*f[i-1];
}
```

# Assignment Submission

- Create a directory named **assignment** in your home directory.
- Create a directory named **09** in your **assignment** directory.
- Put your C files named **p[# of problem].c** for each problem.
  - p01.c
  - p02.c
  - ...
- Due to : **5/6(Wed) 23:59 pm**

# Assignment 01 [15 points]

- The inputs come from the project.
- Output all possible movements and placements of your giraffes line by line.
- Use structures and well organized functions to enhance the readability.
- The readability is going to be evaluated.



**[Input]**

loe

ooo

oGo

CLo

G

ce

**[Output]**

G B3 A3

G B3 B2

G B3 C3

G P B1

G P A2

G P B2

G P C2

G P A3

G P C3

G P C4