C Programming
Day18.B

2017.11.14

4 structure definitions

```c
#include <stdio.h>

struct aaa {
  int a;
  int b;
};

struct bbb {
  double a;
  double b;
};



void pr_aaa( struct aaa X, char *s ) {
  printf("--------------------\n");
  printf("%s.a = %d \n", s, X.a);
  printf("%s.b = %d \n", s, X.b);
}


void pr_bbb( struct bbb X, char *s ) {
  printf("--------------------\n");
  printf("%s.a = %g \n", s, X.a);
  printf("%s.b = %g \n", s, X.b);
}

int main(void) {


  struct aaa A = { 100,  200  };
  struct bbb B = { 11.1, 22.2 };
  struct bbb C;

  C = B;

  pr_aaa( A, "A");
  pr_bbb( B, "B");
  pr_bbb( C, "C");

}
```

```
--------------------
A.a = 100
A.b = 200
--------------------
B.a = 11.1
B.b = 22.2
--------------------
C.a = 11.1
C.b = 22.2
```

```c
#include <stdio.h>

struct bbb {
  double a;
  double b;
};

struct bbb ADD_bbb( struct bbb X, struct bbb Y) {
  struct bbb S;

  S.a = X.a + Y.a;
  S.b = X.b + Y.b;
  return(S);
}


int main(void) {
  struct bbb B = { 11.1, 22.2 };
  struct bbb C;

  C = B;

  printf("\nADD_bbb( B, C )============\n\n");
  printf("B.a= %f \n", B.a);
  printf("B.b= %f \n\n", B.b);

  printf("C.a= %f \n", C.a);
  printf("C.b= %f \n\n", C.b);

  C = ADD_bbb( B, C );

  printf("C.a= %f \n", C.a);
  printf("C.b= %f \n", C.b);

}
```

Structure Returning function

```
ADD_bbb( B, C )============

B.a= 11.100000
B.b= 22.200000

C.a= 11.100000
C.b= 22.200000

C.a= 22.200000
C.b= 44.400000
```

```c
#include <stdio.h>

struct bbb {
  double a;
  double b;
};

typedef struct bbb BT;

BT ADD_bbb( BT X, BT Y) {
  BT S;

  S.a = X.a + Y.a;
  S.b = X.b + Y.b;
  return(S);
}


int main(void) {
  BT B = { 11.1, 22.2 };
  BT C;

  C = B;

  printf("\nADD_bbb( B, C )============\n\n");
  printf("B.a= %f \n", B.a);
  printf("B.b= %f \n\n", B.b);

  printf("C.a= %f \n", C.a);
  printf("C.b= %f \n\n", C.b);

  C = ADD_bbb( B, C );

  printf("C.a= %f \n", C.a);
  printf("C.b= %f \n", C.b);


}
```

```c
#include <stdio.h>

struct bbb {
  double a;
  double b;
} B = {11.1,22.2}, C;

typedef struct bbb BT;

BT ADD_bbb( BT X, BT Y) {
  BT S;

  S.a = X.a + Y.a;
  S.b = X.b + Y.b;
  return(S);
}


int main(void) {

  C = B;

  printf("\nADD_bbb( B, C )============\n\n");
  printf("B.a= %f \n", B.a);
  printf("B.b= %f \n\n", B.b);

  printf("C.a= %f \n", C.a);
  printf("C.b= %f \n\n", C.b);

  C = ADD_bbb( B, C );

  printf("C.a= %f \n", C.a);
  printf("C.b= %f \n", C.b);


}
```

global variables

```
typedef struct bbb { double a; double b; }
        BT;
```

```c
#include <stdio.h>

typedef struct bbb {
    double a;
    double b;
} BT;


BT ADD_bbb( BT X, BT Y) {
  BT S;

  S.a = X.a + Y.a;
  S.b = X.b + Y.b;
  return(S);
}


int main(void) {
  BT B = {11.1,22.2}, C;

  C = B;

  printf("\nADD_bbb( B, C )============\n\n");
  printf("B.a= %f \n", B.a);
  printf("B.b= %f \n\n", B.b);

  printf("C.a= %f \n", C.a);
  printf("C.b= %f \n\n", C.b);

  C = ADD_bbb( B, C );

  printf("C.a= %f \n", C.a);
  printf("C.b= %f \n", C.b);


}
```