

Hack postgres Source Code: Vol I

Chapter 1 : C & Rust

1.42 Self Referential Structures - C

A structure type which has a pointer that can be used to point to the same structure type in which that pointer is present.

```
struct sample {  
    int data;  
    struct sample *link;  
};
```

In the above structure type, there is a pointer `*link` which can be used to point to the structure type (`struct sample`) in which it is present.

These kind of structure types are labelled as `self referential structure types` .

```
#include<stdio.h>  
  
struct sample {  
    int data;  
    struct sample *link;  
};  
  
int main() {  
  
    struct sample s1 = {10, NULL};  
  
    struct sample s2 = {20, NULL};  
  
    /*  
    * We can use pointer in s1 to point to s2 or vice versa.  
    */  
  
    s1.link = &s2;  
  
    /*  
    * To access structure elements using a pointer which has  
    * address of that structure.. We need to use arrow notation  
    * for simplicity.  
    * Current s1 has the member `data` with value - 10 and another  
    * member(which is pointer) has address of s2  
    * s2 has the member `data` with value - 20 and pointer member
```

```
* with value NULL
*/

printf("s1 member - data : %d\n", s1.data);
printf("s1 member - link : %p (address of s2)\n", s1.link);

printf("s2 member - data : %d\n", s2.data);
printf("s2 member - link : %p\n", s2.link);

// Access s2 members using pointer in s1
printf("s2 member - data (using s1 pointer) : %d\n", s1.link->data);
printf("s2 member - link (using s1 pointer): %d\n", s1.link->link);

return 0;

}
```