AULA – 08 ESTRUTURAS

Caio César Teodoro Mendes

Typedef

```
typedef int Inteiro;
typedef int * PonteiroInt;
typedef unsigned long ulong;
```

Definindo novos tipos

```
int main()
{
    Inteiro a = 10;
    PonteiroInt p = &a;
    ulong l = 10;
}
```

struct

```
struct Structure1
{
    char c;
    int i;
    float f;
    double d;
};
```

Definindo uma estrutura

```
int main()
{
    struct Structure1 s1;
    s1.c = 'a';
    s1.i = 1;
    s1.f = 3.14;
    s1.d = 0.00093;
}
```

Seleciona o elemento
utilizando '.'

struct

```
typedef struct Structure1
{
    char c;
    int i;
    float f;
    double d;
} Structure1;
```

Definindo uma estrutura

```
int main()
{
    Structure1 s1;
    s1.c = 'a';
    s1.i = 1;
    s1.f = 3.14;
    s1.d = 0.00093;
}
```

Seleciona o elemento utilizando '.'

struct - ponteiro

```
typedef struct Structure1
{
    int i;
    int * p;
} Structure1;
```
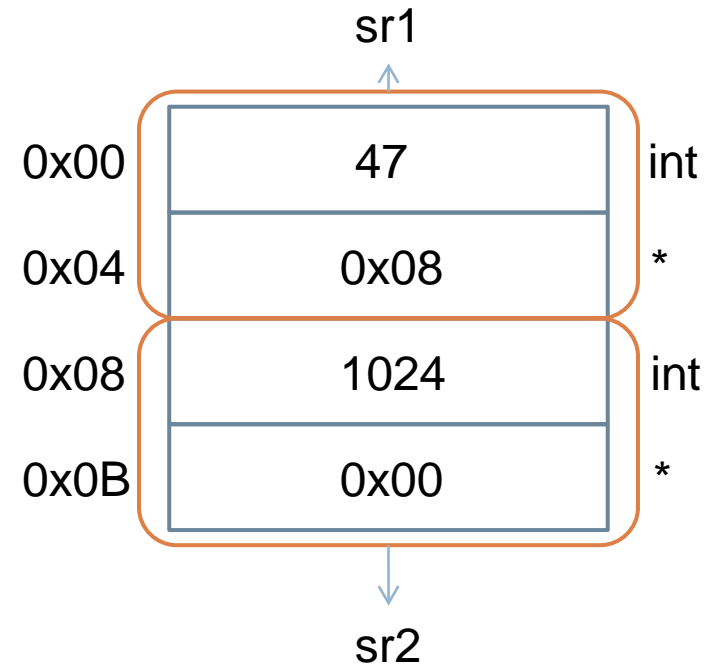
Definindo uma estrutura

```
int main()
{
    Structure1 s1;
    s1.i = 10;
    s1.p = &(s1.i);
    printf("%d", *(s1.p));
}
```

struct - ponteiro

```
typedef struct SelfReferential
{
    int i;
    SelfReferential* sr;
} SelfReferential;
```

```
int main()
{
    SelfReferential sr1, sr2;
    sr1.sr = &sr2;
    sr2.sr = &sr1;
    sr1.i = 47;
    sr2.i = 1024;
}
```

sr1

0x00	47	int
0x04	0x08	*
0x08	1024	int
0x0B	0x00	*

sr2

struct - ponteiro

```
typedef struct Structure3
{
    char c;
    int i;
    float f;
    double d;
} Structure3;
```

```
int main()
{
    Structure3 s1;
    Structure3* sp = &s1;
    sp->c = 'a';
    sp->i = 1;
    sp->f = 3.14;
    sp->d = 0.00093;
}
```

Seleciona utilizando '->'

struct - ponteiro

```c
typedef struct Structure3
{
    char c;
    int i;
    float f;
    double d;
} Structure3;
```

```c
int main()
{
    Structure3 s1;
    Structure3* sp = &s1;
    (*sp).c = 'a';
    (*sp).i = 1;
    (*sp).f = 3.14;
    (*sp).d = 0.00093;
}
```

struct – Alocação Dinâmica

```
typedef struct Structure3
{
    char c;
    int i;
    float f;
    double d;
} Structure3;
```

```
int main()
{
    Structure3* sp = (Structure*) malloc(sizeof(Structure) * 10);
    (sp+5)->i = 10;
    (*(sp+5)).i = 10;
    sp[5].i = 10;
}
```

Info

- Slides: CoteiaWIKI

- Fonte: **Thinking in C++, 2nd ed. Volume 1**