

# Princeton University

## COS 217: Introduction to Programming Systems

### C Structures

#### Defining a Structure Type

```
struct S
{
    int i;
    double d;
};
```

#### Defining a Structure

```
{
    struct S s1;
    ...
}
```

#### Initializing a Structure

```
{
    struct S s1 = {1, 2.2};
    ...
}
```

#### Accessing the Fields of a Structure

```
{
    struct S s1;
    struct S *ps2;
    ...
    s1.i = 1;
    s1.d = 2.2;
    ...
    ps2 = &s1;
    ...
    (*ps2).i = 3;
    (*ps2).d = 4.4;
    ...
    ps2->i = 5;
    ps2->d = 6.6;
    ...
}
```

#### Assigning One Structure to Another

```
{
    struct S s1;
    struct S s2;
    ...
    s2 = s1;
    ...
}
```

## Structures as Function Parameters

```
void f(struct S s)
{
    ...
}

struct S s1;
...
f(s1);
...
```

## Structures as Function Return Values

```
struct S f(void)
{
    struct S s;
    ...
    return s;
}

struct S s1;
...
s1 = f();
...
```

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