Einführung in C - Introduction to C

6. Advanced data types

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Structure

Definition

A **Structure** is a composition of variables of (potentially different) types.

- The keyword `struct` defines the structure, variables are then declared using the structure name (or directly after the closing brace of the structure definition).
- Structures may be nested with other complex types such as arrays or other structures.
- Structure members are accessed via the . operator
- Structure variables can be initialized using curly braces.

struct struct_name { datatype struct_member; … } struct_variables;

```
struct datum
{
   unsigned char tag;
   unsigned char monat;
   int jahr;
};

struct person
{
   char name[50];
   char vorname[50];
   struct datum geboren;
};
```

```
struct person
   dozent, studierende[100];

struct datum weihnachten={ 24, 12,
2020 };
…
strcpy(dozent.name, "Kruse");
dozent.geboren.tag = 12;
…
```

(C99 designated initializers:

```
struct datum weihnachten={ .tag=24,
.monat=12, ... };
```
)

Enum

Definition

The **enum** type specifier is short for "enumerated data". The user can define a fixed set of words that a variable of type enum can take as its value. The words are assigned integer values either automatically by the compiler or explicitly in the code.

```
enum direction
{
  north,
  east,
  south,
  west
};

enum direction my_direction;
my_direction = west;
```

```
enum processState {
     init=1, running=2,
     suspended=3, error=-1
};

enum processState state;

state = init;
```

Address list

Exercise

`address_list.c`

Code snippet 601