

NWEN 241

Systems Programming

Week 6 Tutorial

Reminders

- Mid-term test today – 17:00 -18:00 (details at the course wiki)
- Assignment 1 marking starts next week. You must have received notifications of your slots.
- Slots for assignment 2 marking (due in week 8) will be released on Monday next week (week 7) – **You will have 4 working days to book your slots: April 22 – April 26**

Variable Length Array

In C, variable length arrays (VLAs) are also known as **runtime-sized** or **variable-sized** arrays. The size of such arrays is defined at run-time.

VLA, allowed since C99 but is not implemented in many compilers making the code not portable

Doesn't allow to resize later. Use Dynamic memory allocation if you want to resize array

```
void fun(int size)
{
    int arr[size];
    // code
}
```

Union vs Structure

	Structure	Union
Declaration syntax	Same	
Storage allocation	Allocates storage for all members separately	<ul style="list-style-type: none">• Allocates common storage for all its members• Space is allocated to hold the biggest member
Access	All members can be accessed at the same time	Only one member can be “active” at any given time

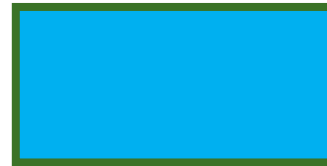
Union Application

- Data structure for a record which can contain at least 2 types, but only one type is active at any given time

Record type 1:



Record type 2:



- Using struct:



- Using union:



File Stream I/O

- Open file
- Use file
 - Can use either unformatted I/O or formatted I/O operations depending on requirements
- Close file

Command Line Arguments

- General format of command line arguments:

```
int main(int argc, char* argv[])
```

- `argc`
 - Number of arguments (including program name)
- `argv`
 - Array of strings
 - `argv[0]` → program name
 - `argv[1]` → first argument
 - ...
 - `argv[argc-1]` → last argument