EEE101: C Programming & Software Engineering I

Lecture 12: Miscellaneous

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Outline of Today's Lecture (12)

- Pointers and 2D arrays
- Quick Review Structures
- Quick Review Files
- Assignment 5
  - Phone.c program
  - QnA

Pointers - Addresses

- **char** b[2][3] How is it stored in the memory?

Address	Content	Name
0x22ff00	8 binary bits	b[0][0]
0x22ff01	8 binary bits	b[0][1]
0x22ff02	8 binary bits	b[0][2]
0x22ff03	8 binary bits	b[1][0]
0x22ff04	8 binary bits	b[1][1]
0x22ff05	8 binary bits	b[1][2]
…	8 binary bits	

Pointers - Addresses

- **char** b[2][3];
  char *p;
  p=b[0]; What is p pointing at? Is this correct?

&b[0][0]

Address	Content	Name
0x22ff00	8 binary bits	b[0][0]
0x22ff01	8 binary bits	b[0][1]
0x22ff02	8 binary bits	b[0][2]
0x22ff03	8 binary bits	b[1][0]
0x22ff04	8 binary bits	b[1][1]
0x22ff05	8 binary bits	b[1][2]

Pointers - Addresses

- **char** b[2][3];
  char *p;
  p=b[0]; what would p++ do?

Address	Content	Name
0x22ff00	8 binary bits	b[0][0]
0x22ff01	8 binary bits	b[0][1]
0x22ff02	8 binary bits	b[0][2]
0x22ff03	8 binary bits	b[1][0]
0x22ff04	8 binary bits	b[1][1]
0x22ff05	8 binary bits	b[1][2]

Pointers - Addresses

- **char** b[2][3];
  char *p;
  p=b; What is p pointing at? Is this correct?

Address	Content	Name
0x22ff00	8 binary bits	b[0][0]
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0x22ff04	8 binary bits	b[1][1]
0x22ff05	8 binary bits	b[1][2]

Pointers - Addresses

- **char** b[2][3];
  char (*p)[3];
  p=b;

Address	Content	Name
0x22ff00	8 binary bits	b[0][0]
0x22ff01	8 binary bits	b[0][1]
0x22ff02	8 binary bits	b[0][2]
0x22ff03	8 binary bits	b[1][0]
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Pointers - Addresses

- **char** b[2][3];
  char (*p)[3];
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Structures

- Variable used to group other variables together
- Each item inside the structure is a member
- Can be any number of members and any mixture of types
- Members accessed with the . operator
- Members accessed with -> operator if using a structure pointer
- Example in phone.c will be discussed

Files

- A space on the computer hard disk for permanent storage of data.
- Accessed by the program using a file pointer
  FILE *name;
- Must be opened first
- Mode of file opening is important e.g. read only, write, append…etc..
- Always close an open file
- Location in file is stored in file pointer.
- Various flags can be tested e.g. feof
- Example in phone.c

Questions?

Module Questionnaire ☺