

# Outline for May 22, 2002

**Handouts:** *none*

**Reading:** Johnsonbaugh and Kalin, pp. 679–702 (appendix of useful functions)

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1. Greetings and felicitations!
2. Example program: binary tree
3. Libraries
  - a. compiling with libraries
  - b. common libraries: stdio, ctype
4. Standard I/O Library (`#include <stdio.h>`)
  - a. open file: `fopen`
  - b. unstructured read/write: `getchar`, `fgetc (getc)`, `putchar`, `fputc (putc)`
  - c. formatted read/write: `fgets (gets)`, `fscanf`, `fputs (puts)`, `fprintf`
  - d. structured read/write: `fread`, `fwrite`
  - e. random access: `fseek`, `ftell`, `rewind`
  - f. close file: `fclose`
  - g. miscellaneous: `feof`, `ferror`, `clearerr`
5. Character types and conversions (`#include <ctype.h>`)
  - a. alphabetic, numeric, alphanumeric: `isalnum`, `isdigit`, `isxdigit`, `isalpha`
  - b. upper, lower, and conversions: `isupper`, `islower`, `toupper`, `tolower`
  - c. types of chars: `isctrl`, `isgraph (not blank, printable)`, `isprint (printable)`, `ispunct`, `isspace`
6. String conversion (`#include <stdlib.h>`)
  - a. string to number: `atoi`, `atof`, `atol`
7. String functions (`#include <string.h>`)
  - a. compare: `strcmp`, `strncmp`, `strcasecmp`, `strncasecmp`; `memcmp`
  - b. copy: `strcpy`, `strncpy`; `memcpy (no overlap)`, `memmove (overlap okay)`
  - c. find character: `strchr (index)`, `strchr (rindex)`, `strpbrk`; `memchr`
  - d. length: `strlen`
8. Memory management (`#include <stdlib.h>`)
  - a. Allocation: `malloc`, `calloc`
  - b. Release: `free`, `cfree (deprecated)`
  - c. Reallocation: `realloc()`
9. Miscellaneous
  - a. terminate program (`exit`); include `<stdlib.h>`
  - b. sort array of data (`qsort`); include `<stdlib.h>`
  - c. time of day (`time`, `ctime`); include `<time.h>`
  - d. execute command (`system`); include `<stdlib.h>`