

comp1511 week 3

starting ~5 minutes past the hour

announcements:

- assignment 0 due this week
- help sessions

today:

- while loops
- 2D while loops
- enums and structs
- variable names

questions?

eg. about concepts so far...

- printing/scanning
- variables
- if statements
- types

FAQ...

- where to get help
- is programming supposed to be hard
- when are things due

<pre>printf("My</pre>	question	about	COMP1511	that	hasn't	been	answered	is:	is	there	free	food?\	n");

while loops

code demo: while.c

```
Error:
                                                                                                                                                 0
                                        void b(void) {
 void a(void) {
                                                                                  void c(void) {
                                                                                                                             Accessing
                                            int i = 1;
     int i = 5;
                                                                                      int i = 0;
                                                                                                                             Uninitialized
                                             while (i < 32) {
                                                                                      while (i < 32) {
     while (i > 0) {
                                                                                                                             Variable
                                                printf("%d\n", i);
         printf("%d\n", i);
                                                                                          printf("%d\n", i);
                                                i = i + i;
                                                                                          i = i + 2;
         i - - ;
D
                                     E
                                                                           F
                                                                                                                           2
                                                                                                                                               6
void d(void) {
                                     void e() {
                                                                            void f(void) {
    int i = 5;
                                         int i = 0;
                                                                                                                                                 2
                                                                                int i;
    while (i >= 0) {
                                          int keep_going = 1;
                                                                                while (i > 0) {
         printf("%d\n", i);
                                         while (keep_going == 1) {
                                                                                    printf("%d\n", i);
                                                                                                                             28
        i - - ;
                                                                                                                                                 16
                                             if (i > 3) {
                                                                                    i--;
                                                                                                                             30
                                                  keep_going = 0;
                                             i++;
                                                                                                                           3
                                                                                                                                               7
                                         printf("%d\n", i);
 G
                                                                        н
  void g(void) {
                                                                         void h() {
                                                                                                                                                 2
      int i = 0;
                                                                             int i = 0;
                                                                                                                             [...]
      int max = 32;
                                                                             int keep_going = 0;
      while (i < max) {
                                                                             while (keep_going == 1) {
                                       match the loop
          printf("%d\n", i);
                                                                                 if (i > 3) {
                                       (letters A-H)
          max = max + 2;
                                                                                     keep_going = 0;
                                       with the output
                                                                                                                                               8
                                                                                 i++;
                                       (numbers 1-8)
                                                                             printf("%d\n", i);
                                                                                                                                                 2
                                                                                                                                                 1
```

C

5

В

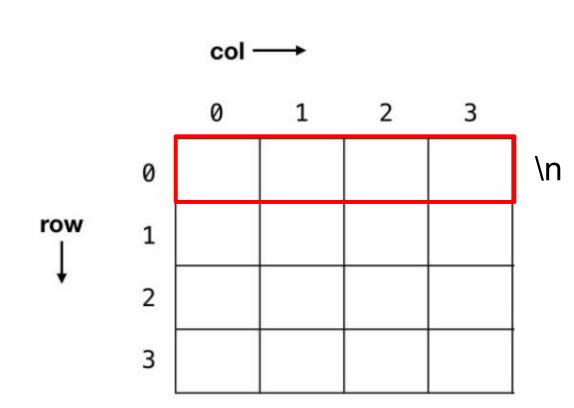
A

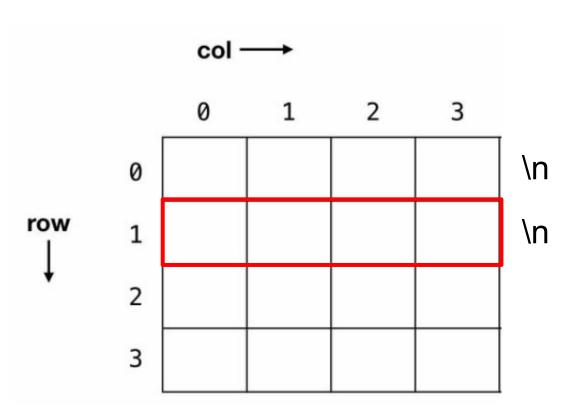
2D loops

./square

Enter size:

5





2D WHILE LOOPS

draw a 4x4 grid on the whiteboard

draw out what pattern these 4 while loops print out

(share the marker!)

```
void a(void) {
    int row = 0;
    while (row < SIZE) {
        int col = 0;
        while (col < SIZE) {
            if (row == col) {
                printf("0");
            } else {
                printf("X");
            }
            col++;
        }
        row++;
        printf("\n");
    }
}</pre>
```

```
void b(void) {
   int row = 0;
   while (row < SIZE) {
      int col = 0;
      while (col < SIZE) {
        if (col % 2 == 0) {
            printf("0");
        } else {
            printf("X");
        }
        col++;
    }
    row++;
    printf("\n");
}</pre>
```

```
void c(void) {
   int row = 0;
   while (row < SIZE) {
      int col = 0;
      while (col < SIZE) {
        if (col != 1 && row != 1) {
            printf("0");
      } else {
            printf("X");
      }
      col++;
    }
    row++;
    printf("\n");
}</pre>
```

```
void d(void) {
   int row = 0;
   while (row < SIZE) {
       printf("X");
       int col = 1;
       while (col < 3) {
            if (row == 0 || row == 3) {
                 printf("X");
            } else {
                 printf("0");
            }
            col++;
       }
       printf("X");
       row++;
       printf("\n");
    }
}</pre>
```

```
void a(void) {
    int row = 0;
    while (row < SIZE) {</pre>
        int col = 0;
        while (col < SIZE) {</pre>
             if (row == col) {
                 printf("0");
             } else {
                 printf("X");
             col++;
        row++;
        printf("\n");
```

structs and enums

```
#include <stdio.h>

struct person {
    int shoe_size;
    double height;
    char first_name_initial;
};

#include <stdio.h>

enum opal_card_type {
    ADULT,
    STUDENT,
    CONCESSION
};
```

see **structs.c** and **enums.c**

Kahoot! (on variable names)

https://play.kahoot.it/v2/?quizId=deea44c4-fd97-4a89-abf7-9fa93b431367



variable names

- 1. This is not valid C: it would not compile
- 2. This name is forbidden by the style guide: 1511 style would complain
- 3. This name is a poor name: a tutor would complain
- 4. This name is a good name for a student to write

Pick the *first one* that applies

reminder about variable names...

Legal variable names in C

- Variable names can contain letters, numbers, or _
- Variables names must not start with a number

Good style in C

- Variable names should always start with a lowercase letter
- Variable names should always use snake_case (in 1511)
- #define names must be in SHOUTING_SNAKE_CASE

Good variable names have good style and

- Are named descriptively
- Are named in a way which is relevant to the program