comp1511 week 3

starting ~5 minutes past the hour

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announcements:

- **Assignment 0** due next week
- **Help Sessions**: coming soon!

today:

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

questions?

while loops

code demo: while.c

A
```c
void a(void) {
    int i = 5;
    while (i > 0) {
        printf("%d\n", i);
        i--;
    }
}
```

B
```c
void b(void) {
    int i = 1;
    while (i < 32) {
        printf("%d\n", i);
        i = i + i;
    }
}
```

C
```c
void c(void) {
    int i = 0;
    while (i < 32) {
        printf("%d\n", i);
        i = i + 2;
    }
}
```

D
```c
void d(void) {
    int i = 5;
    while (i >= 0) {
        printf("%d\n", i);
        i--;
    }
}
```

E
```c
void e() {
    int i = 0;
    int keep_going = 1;
    while (keep_going == 1) {
        if (i > 3) {
            keep_going = 0;
        }
        i++;
    }
    printf("%d\n", i);
}
```

F
```c
void f(void) {
    int i;
    while (i > 0) {
        printf("%d\n", i);
        i--;
    }
}
```

G
```c
void g(void) {
    int i = 0;
    int max = 32;
    while (i < max) {
        printf("%d\n", i);
        max = max + 2;
    }
}
```

H
```c
void h() {
    int i = 0;
    int keep_going = 0;
    while (keep_going == 1) {
        if (i > 3) {
            keep_going = 0;
        }
        i++;
    }
    printf("%d\n", i);
}
```

**match the loop
(letters A-H)
with the output
(numbers 1-8)**

1
```
Error:
Accessing
Uninitialized
Variable
```

2
```
0
2
4
[...]
28
30
```

3
```
0
0
0
0
[...]
```

4
```
5
```

5
```
0
```

6
```
1
2
4
8
16
```

7
```
5
4
3
2
1
0
```

8
```
5
4
3
2
1
```

2D loops

./square

Enter size: 5

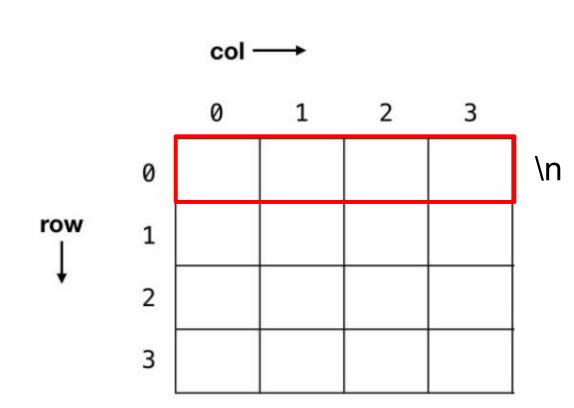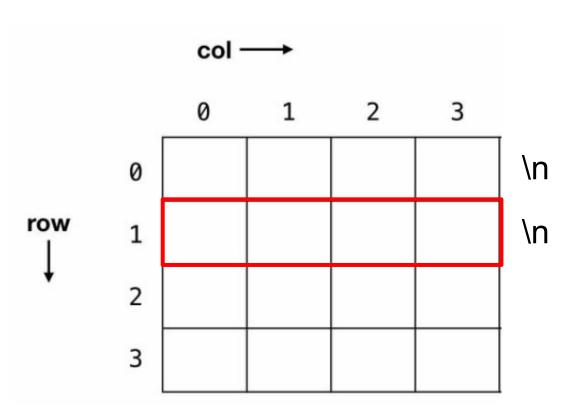*****

*****

*****

*****

*****

2D WHILE LOOPS

draw a 4x4 grid on the whiteboard

draw out what pattern these 4 while loops print out

(share the marker!)

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

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

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

```c
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("O");
            }
            col++;
        }
        printf("X");
        row++;
        printf("\n");
    }
}
```

structs and enums

code demo: structs_enums.c

1. make a **struct** (`struct pet`) which represents a pet
2. include an **enum** in the struct
3. declare and initialise a struct

Kahoot! (on variable names)

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