



# comp1511 week 3

starting ~5 minutes past the hour

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## **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

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

# **while loops**

code demo: `while.c`

A

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

B

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

C

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

1

Error:  
Accessing  
Uninitialized  
Variable

5

0

D

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

E

```
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

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

2

0  
2  
4  
[...]  
28  
30

6

1  
2  
4  
8  
16

G

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

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

H

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

3

0  
0  
0  
0  
[...]

7

5  
4  
3  
2  
1  
0

4

5

8

5  
4  
3  
2  
1

## 2D loops

```
./square
```

```
Enter size: 5
```

```
*****
```

```
*****
```

```
*****
```

```
*****
```

```
*****
```



col →

0 1 2 3

row ↓

0					\n
1					
2					
3					

		col →				
		0	1	2	3	
row ↓	0					\n
	1					\n
	2					
	3					

## 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("O");  
            } else {  
                printf("X");  
            }  
            col++;  
        }  
        row++;  
        printf("\n");  
    }  
}
```

```
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");  
    }  
}
```

```
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");  
    }  
}
```

```
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");  
    }  
}
```

```
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");  
    }  
}
```

# structs and enums

```
#include <stdio.h>

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

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

```
#include <stdio.h>

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

# 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