

comp1511 week 03

admin

- **assignment 0** due at 8pm on 30th of September
- help sessions start this week!
 - you can find the timetable on Teams/course website

agenda for today

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

while loop demo (see loop.c)

how do we write a while loop?

while loops exercise

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;  
    }  
}
```

D

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

E

```
void e(void) {  
    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--;  
    }  
}
```

G

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

H

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

2d while loop demo (see 2d_loop.c)

how do we print a 4x4 grid of X's?

how do we print a nxn grid of X's?

2d while loop exercise

Assume '#define SIZE 4' in all examples

```
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");
    }
}
```

solutions

Answers are below.

1

OXXX
XOXX
XXOX
XXXO

2

OXOX
OXOX
OXOX
OXOX

3

OX00
XXXX
OX00
OX00

4

XXXX
X00X
X00X
XXXX

structs (see structs.c)

```
#include <stdio.h>

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

enums (see enums.c)

```
#include <stdio.h>

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

```
#include <stdio.h>

#define ADULT 0
#define STUDENT 1
#define CONCESSION 2
```

variable names

- you should remember the following rules about **Legal variable names in C**:
 - variable names can contain letters, numbers, or _.
 - variable names must not start with a number.
- you should also remember these rules about variable names which are **Good Style in C**:
 - variable names should always start with a lowercase letter
 - variable names should always use snake_case
 - #defines names must be in SHOUTING_SNAKE_CASE.

kahoot!

- questions will have the following options:
 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."

<https://create.kahoot.it/share/comp1511-week-3-tut/deea44c4-fd97-4a89-abf7-9fa93b431367>

any questions?