comp1511 week 03

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admin

- remember you can get help from:
  - forum
  - help sessions
  - PASS sessions begin this week!
  - email me :))
- lab exercises
  - remember to read the spec carefully and match output exactly
  - we’ll be doing check ins in lab today

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?

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?

Assume '#define SIZE 4' in all examples

2d while loop exercise

```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");
    }
}
```

solutions

1

```
0XXX
X0XX
XX0X
XXX0
```

2

```
0X0X
0X0X
0X0X
0X0X
```

3

```
0X00
XXXX
0X00
0X00
```

4

```
XXXX
X00X
X00X
XXXX
```

structs (see structs.c)

```c
#include <stdio.h>

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

enums (see enums.c)

```c
#include <stdio.h>

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

```c
#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` .

Variable names can still be a poor name, even if they follow the style guide. Variables should be named descriptively, and in a way which is relevant to the program.

kahoot!

- questions will have the following options:
  - "This is not valid C." (it would not compile)
  - "This name is forbidden by the style guide." (`1511 style` would complain)
  - "This name is a poor name." (a tutor would complain)
  - "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?