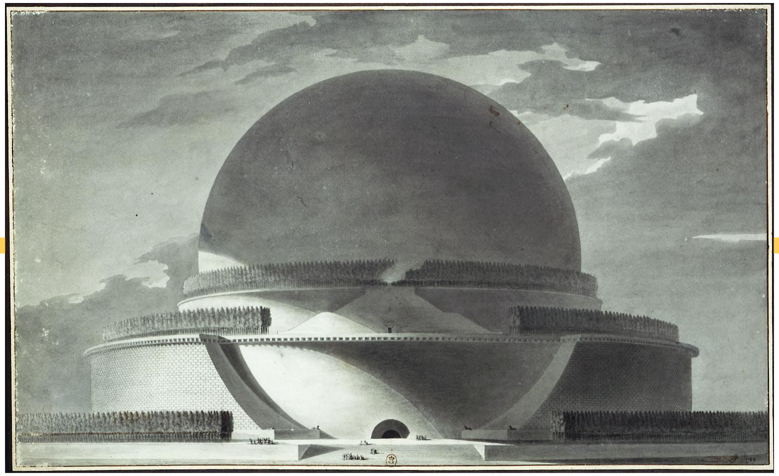
Cenotaph for Newton



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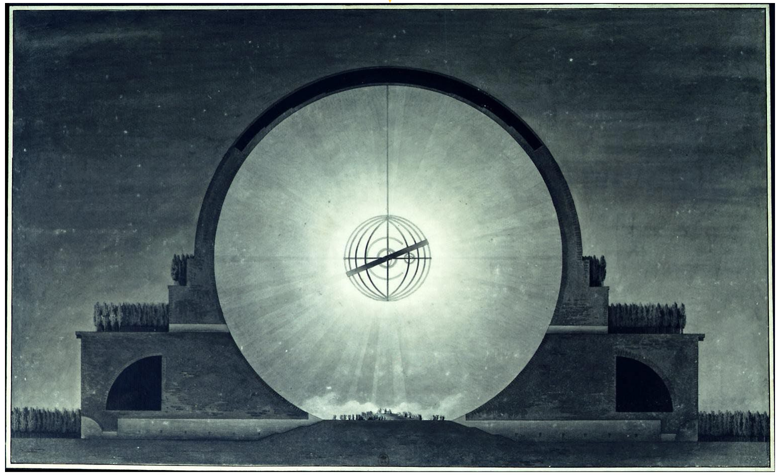

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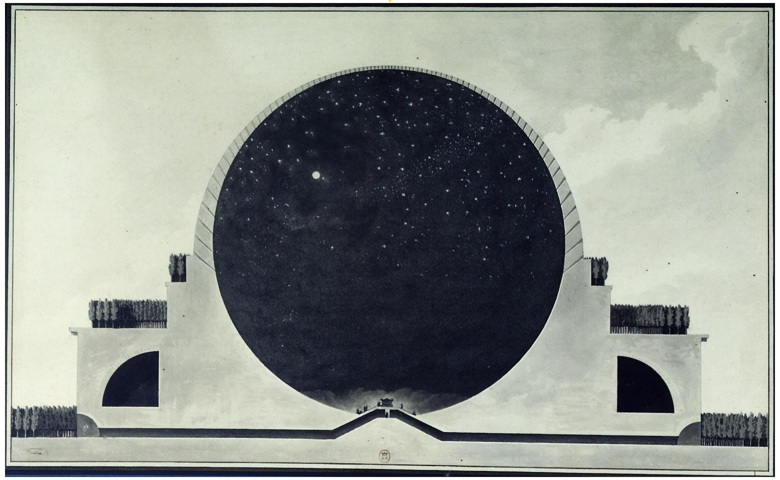

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COMP1511 Week 3!

H13A: 1pm – 4pm

Tutors: Me + Vivian Zheng

My GitHub:

https://github.com/william-o-s/unsw_comp1511_tutoring

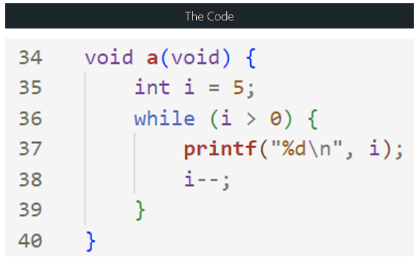
Course Homepage:

https://cgi.cse.unsw.edu.au/~cs1511/23T3/

The Agenda

While Loops (15 mins)

In 4 groups, let's tackle some **`while`** loops...

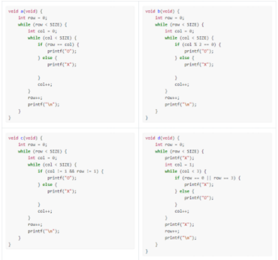


The Code

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

2D While Loops (15 mins)

In 4 groups still, let's tackle some 2D loops...



```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");
    }
}
```

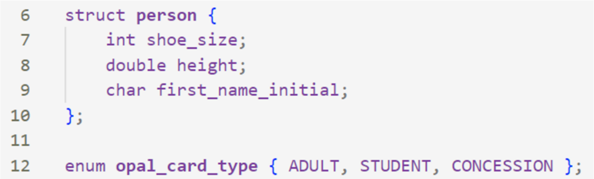
```c
void c(void) {
    int row = 0;
    while (row < SIZE) {
        int col = 0;
        while (col < SIZE) {
            if (col != 1 && row != 1) {
                printf("O");
            } else {
                printf("X");

            }
            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");
    }
}
```

ASSUME:
`#define SIZE 4`

Structs and Enums (15 mins)

Preliminary discussion: **`struct`** vs **`enum`**



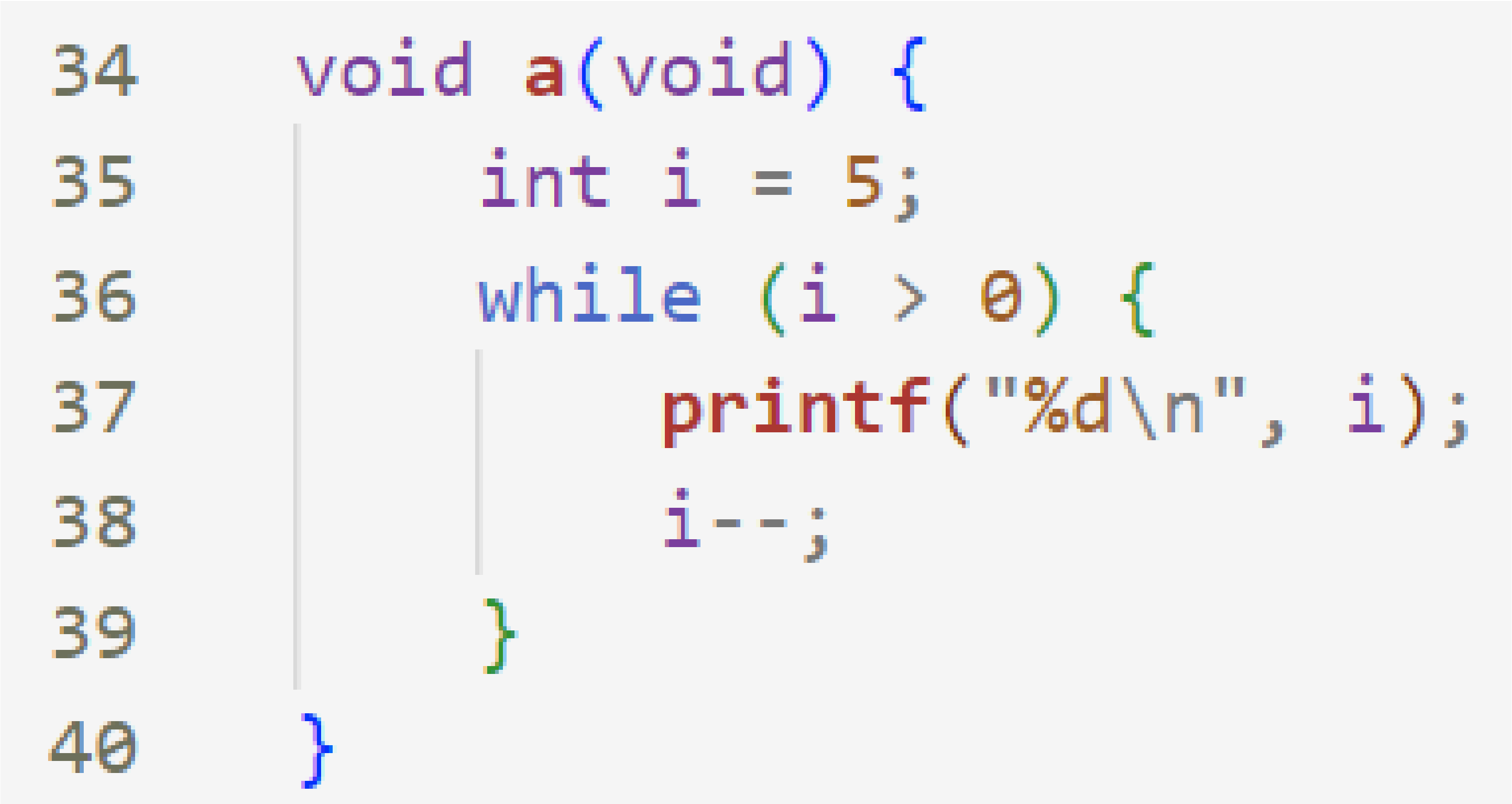
```c
struct person {
    int shoe_size;
    double height;
    char first_name_initial;
};

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

Variable Names (15 mins)

Let's Kahoot!

In 4 groups, let's tackle some **`while`** loops…

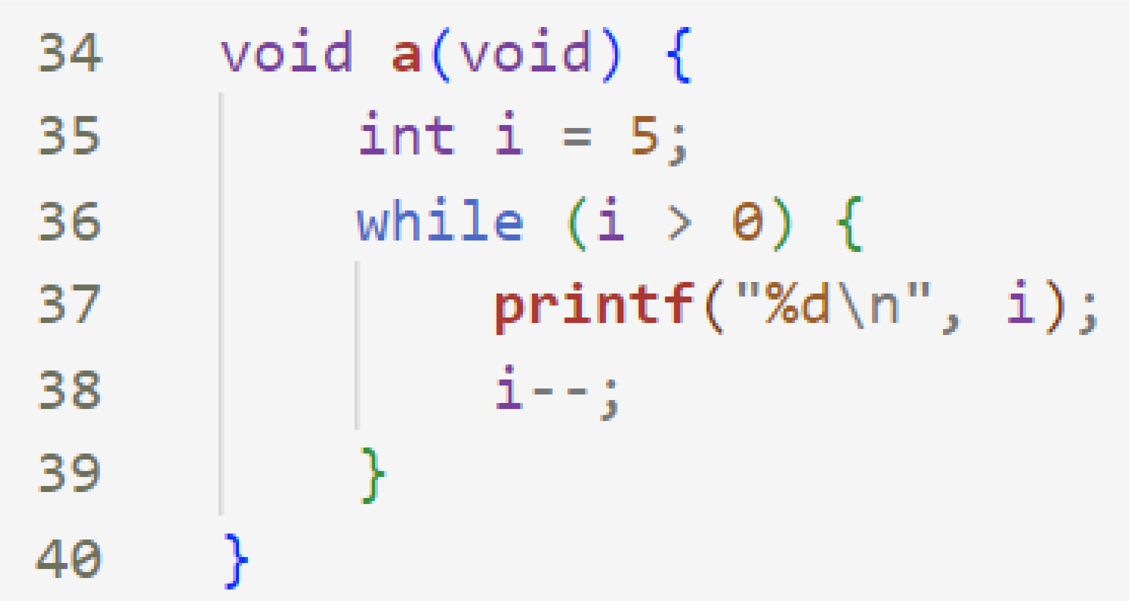
The Code



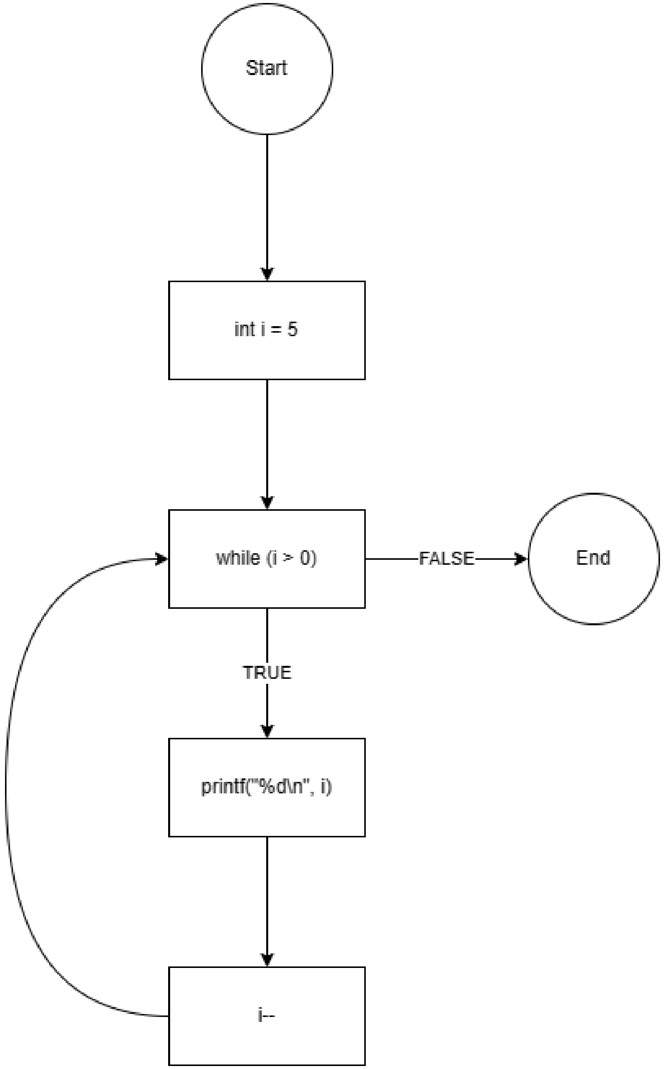
```c
void a(void) {
    int i = 5;
    while (i > 0) {
        printf("%d\n", i);
        i--;
    }
}
```

In 7 groups, let's tackle some **while** loops...

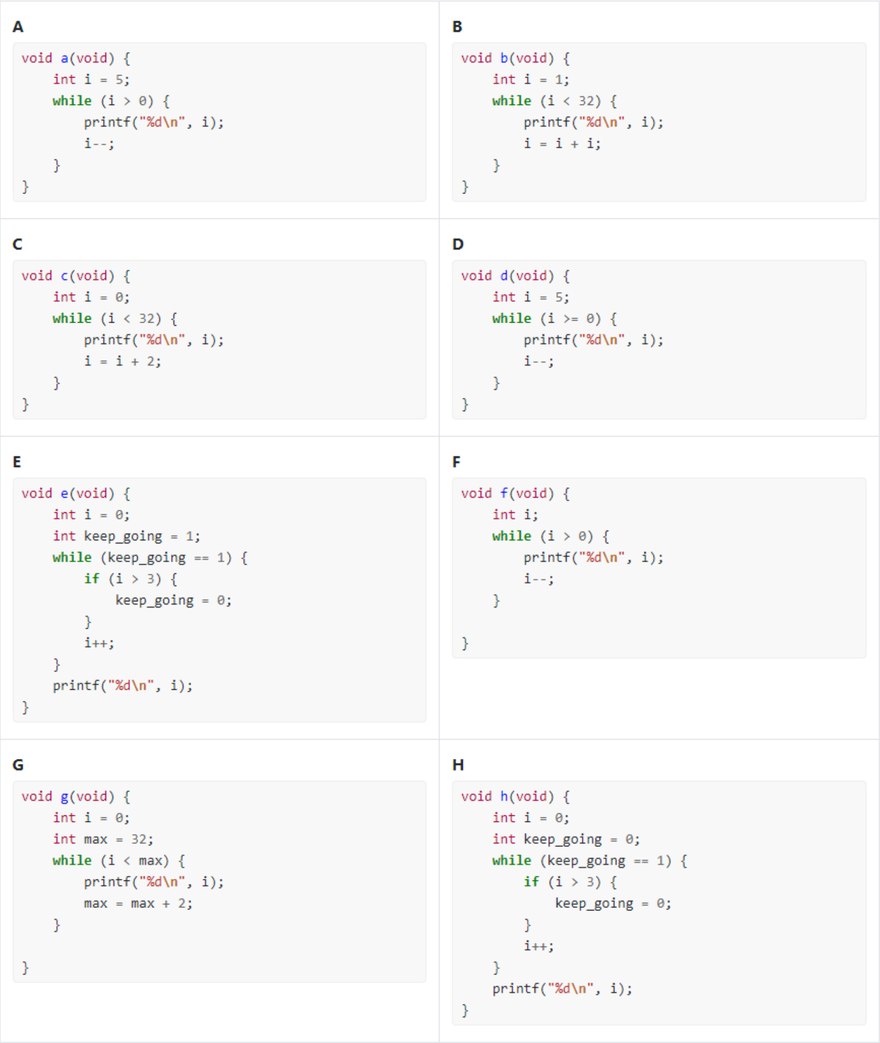
The Code



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



In 7 groups, let's tackle some **`while`** loops...



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(void) {
    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--;
    }

}
```

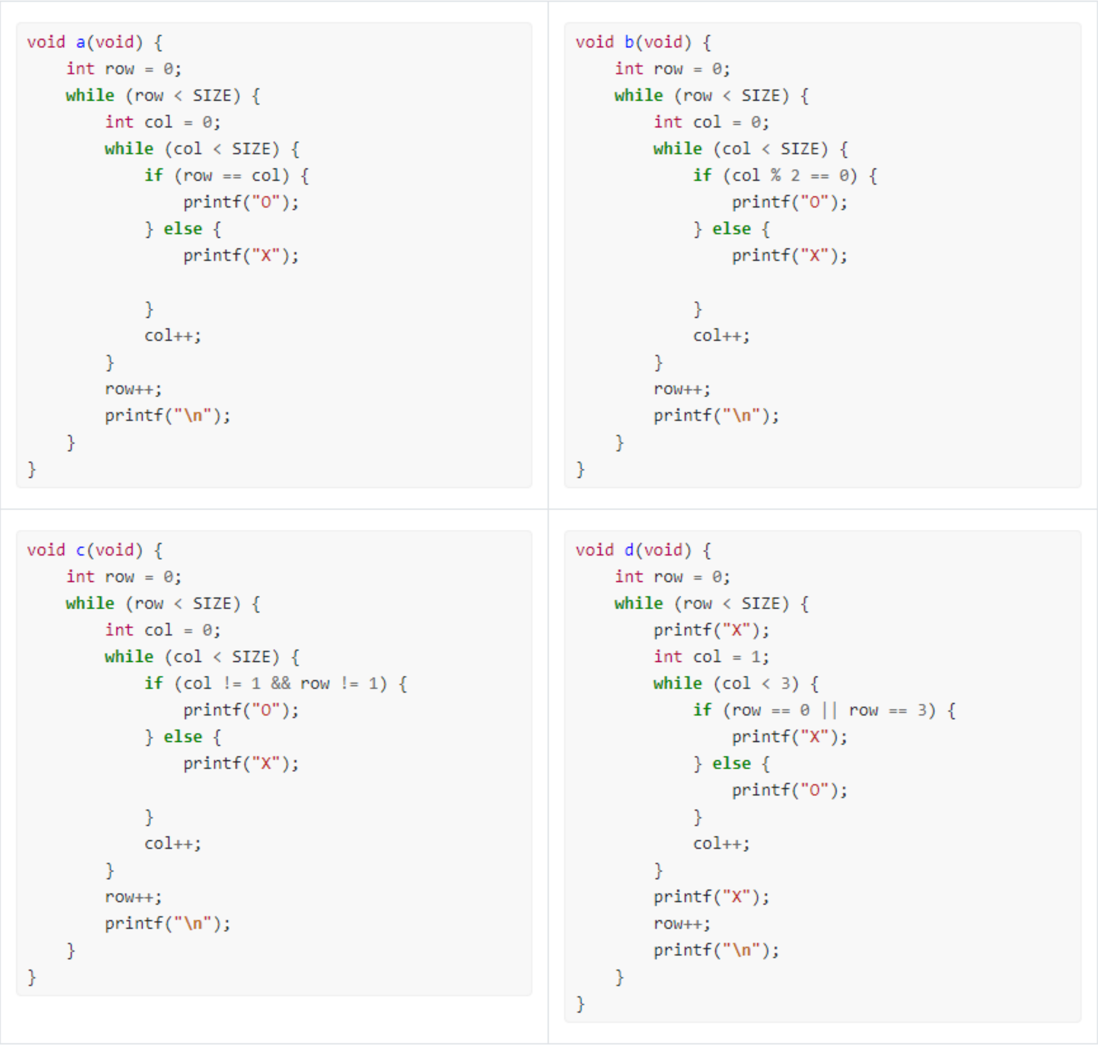
G

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

}
```

H

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

In 4 groups still, let's tackle some 2D loops…



```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");
    }
}
```

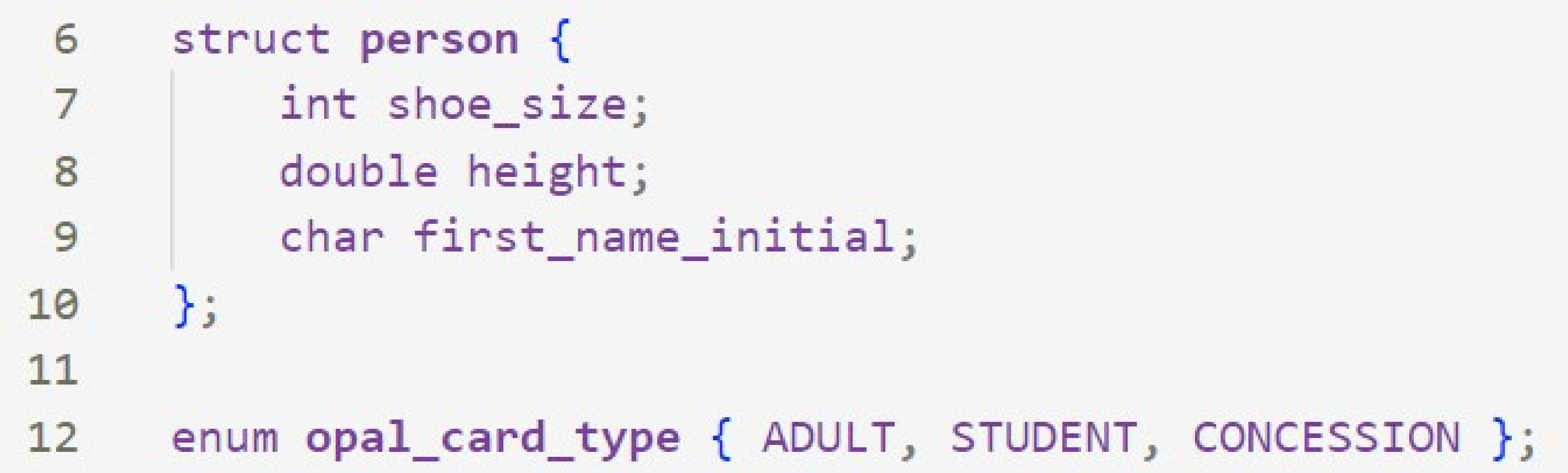
```c
void c(void) {
    int row = 0;
    while (row < SIZE) {
        int col = 0;
        while (col < SIZE) {
            if (col != 1 && row != 1) {
                printf("O");
            } else {
                printf("X");

            }
            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");
    }
}
```

ASSUME:

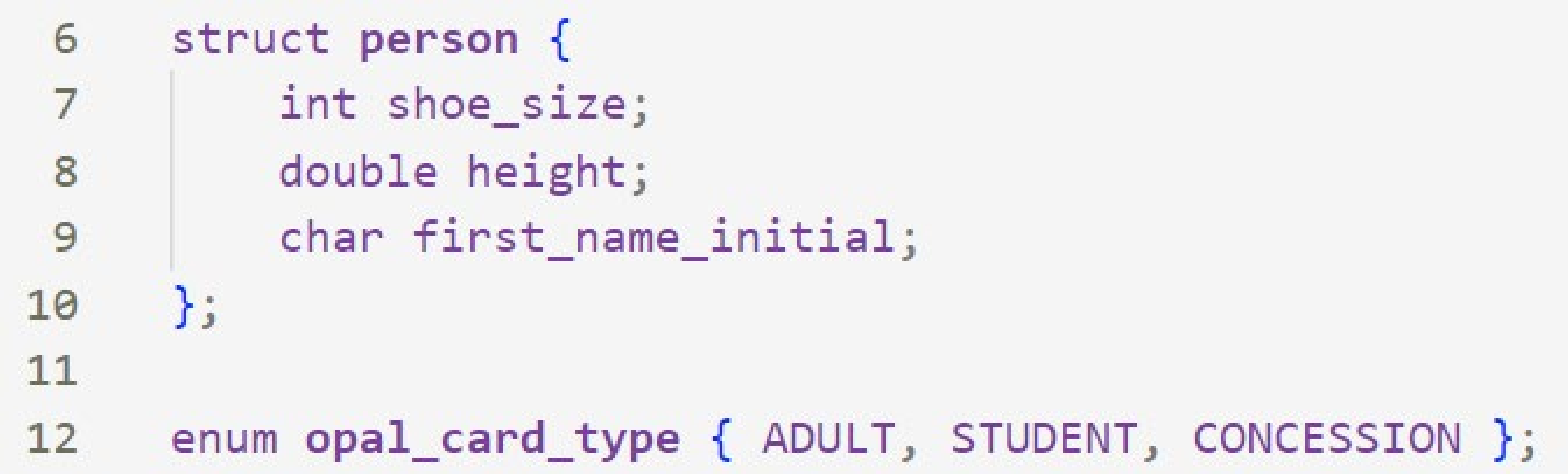
`#define SIZE 4`

Preliminary discussion: **struct** vs **enum**



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

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

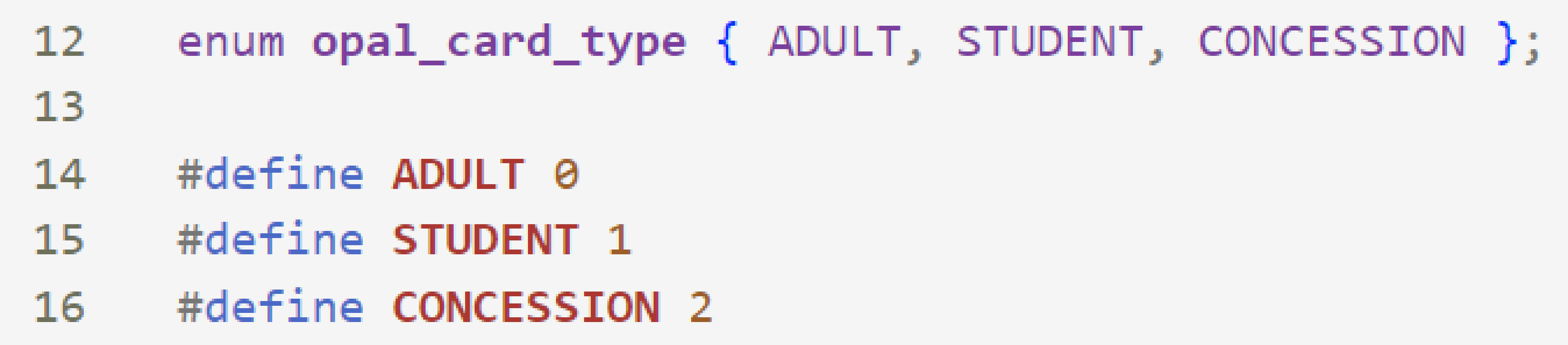
What differences can you see?



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

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

struct vs. enum

Okay, but what about **enum** vs **#define**?



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

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

enum vs. #define

Let’s Kahoot!