

C: compilation; operators; output; control structures

COSC 208, Introduction to Computer Systems, 2022-01-25

Announcements

- First lab today/tomorrow

Outline

- Warm-up
- Hello, C: types; operators
- output
- Control structures

Warm-up

Q1: What are the main components of a computer system?

Operators

Q2: What is the output of this program?

```
int main() {
    int x = 1;
    int y = 2;
    x = x+5;
    printf("%d ", x);
    x = y*2;
    printf("%d ", x);
    x *= 5;
    printf("%d ", x);
    printf("%d ", x--);
    printf("%d ", x);
    printf("%d ", --x);
    printf("%d", x);
}
```

Q3: What is the output of this program?

```
int main() {
    int x = 5;
    int y = x/2;
    int z = x%2;
    printf("%d %d\n", y, z);
}
```

Q4: What is the output of this program?

```
int main() {  
    int x = 5;  
    char y = 'A';  
    y = y + 5;  
    printf("%c %d\n", y, y);  
}
```

🛑 Stop here after completing the above questions; if you have extra time please **skip ahead** to the extra practice.

Output

Q5: Assume the variables *year*, *month* and *day* contain the parts of a date. Use *printf* to output the data (e.g., *2022-1-26*)

Q6: Assume the variables *length* and *width* contain the dimensions of a sports field/court. Use *printf* to output the dimensions (*94ft x 50ft*)

Q7: Assume the variables *first* and *last* contain a patient's first and last initial, and the variables *systolic* and *diastolic* contain the patient's blood pressure readings. Use *printf* to output the patient's initials and blood pressure (e.g., *A.G. 115/70*)

Q8: Write a program that prints the number of days, hours, and minutes in a week.

Control structures

Q9: Write a program that flips a coin: call `random()` to generate a random number, and print `heads` if the number is even and `tails` if the number is odd.

Q10: Write a program that prints all even numbers from 1 to 100 using a for loop.

Q11: Write the same program using a while loop.

Extra practice

QA: Write a program that prints out the powers of 2 from 2 through 2048.

QB: Write a program that prints all numbers from 1 to 100, except:

- If the number is divisible by 3 then print *Three*
- If the number is divisible by 5 then print *Five*
- If the number is divisible by 3 and 5, print *Both*

QC: Write a program that prints every letter of the alphabet in upper and lower case: *AaBbCcDd...YyZz*