**Loops:**

practice (write program that requests int and prints sum of digits to screen (1234 = 1 + 2 + 3 + 4))

1. int i = 0
2. int total = 0
3. printf("enter a number:")
4. scanf("%d", &i)
5. for (int j = 0; j >

**first algorithm: Euclidean Algorithm**

- how do we reduce 1080/1920?

- by using the division algorithm, we can divide the larger number bu the smaller number

- we can do this through subtraction

1920 = 1080(1) + 840

1080 = 840(1) + 240

840 = 240(3) + 120

240 = 120(2) + 0

GCD is 120

330 = 210 + 120

210 = 120 + 90

120 = 90 + 30

90 = 30(3) + 0

GCD is 30

**Mod Operator:**

- remainder when dividing two numbers is most important

- in C we have modulus operator %, and defined over integers a >=0

**Repeating Structure:**

- at each step, doing the same thing a certain number of times

- in C, we can do this using a while loop

1. while(expr\_is\_true){
2. //do something
3. }

- this will continue running the expression until false

- the loop should take in a variable and have it change within that loop, or it will run forever

**Loops and variables:**

- the command int i = 5 initializes a variable

Variable names:

- must begin with letter or underscore

- after the first letter, can be letters, numbers, or underscores

- case sensitive

- cannot be keyworkds (int)

**Printing variables:**

printf(string, argument(s));