# 1. Java installation

A screenshot of a cell phone

Description automatically generated

# 2. Java\_Home

# 3. JavaFX

# 4. HelloWorld

A screenshot of a social media post

Description automatically generated

# 5. Helloworld 2

A screenshot of a social media post

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Additional problems

1. Puzzle problem. In order to find the average of ten homework grades your program will need a few variables. Grades += the input from the user. This will total all of the grades that are being input. You may also set a counter as to how many grades are being input, or since you know that it will be ten grades, upon completion of the grades being input into the program your variable – Average will = grades divided by ten. Average will need to be of the primitive type **double.**
2. Puzzle problem – Caesar cipher. Encryption = (x + n) mod 26. First input the String alphabet. Input the integer 5 to indicate the right shift of characters. Traverse each character in the alphabet one character at a time. Then, alphabet = (char)(alphabet + shift).
3. Puzzle Problem – Decode Caesar cipher. The decoded message says “puzzles are fun”. The decryption is similar to the encryption method however the main algorithm is Decyption = (n - 6) mod 26. In order to decode the message without knowing the shift, you could run a loop that will run each shift and system.output.println each shift there may be. You will then read each output and discover the message ( the one that makes sense).
4. Puzzle Problem – Small chalkboard. This can be done similarly to the first puzzle problem. You will need to use a grade = scanner.nextInt that will allow the chalkboard to take one number at a time from the user. Then you use a variable like “total += grade” as well as a counter. Set the counter and each time the user adds a grade, that counter will +=. You can do this either using a loop or using a Boolean if, then statement. This will give you the grade total, and number of grades. Your algorithm will them divide total by the number of grades, and there is your answer.
5. Determine the output: N = 15
6. Step(n){

If(n%2==0) return n/2;

return 3 \* n + 1;}

collatz(n){

int a = 1;

while(n !=1){

n = Step(n);

a++;}

return a;

This is difficult to completely describe in pseudocode, therefore I provided that little snipit of code. Starting with 15, the code is tripled and 1 is added – giving you 46. 46 is then divided by 2 giving you 23. 23 is tripled and one is added giving you 70. So on and so on.. here is the output..

46,23,70,35,106,53,160,80,40,20,10,5,16,8,4,2,1

1. Determine the output: N = 6… output = 3,10,5,16,8,4,2,1
2. Circle UML diagram

A picture containing sitting, public, bus, blue

Description automatically generated

1. Triangle UML diagram

A blue and white sign

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1. See Pattern.java file