CSCI 132:
Basic Data Structures and Algorithms

Intro to Java (Data Types, Variables, Operators)

Reese Pearsall

Spring 2024

Announcements

- Fill out the course questionnaire and join Discord
- CSCI 127 Prereq

CSCI 132 TAs

•Section 003- **Shama Maganur**
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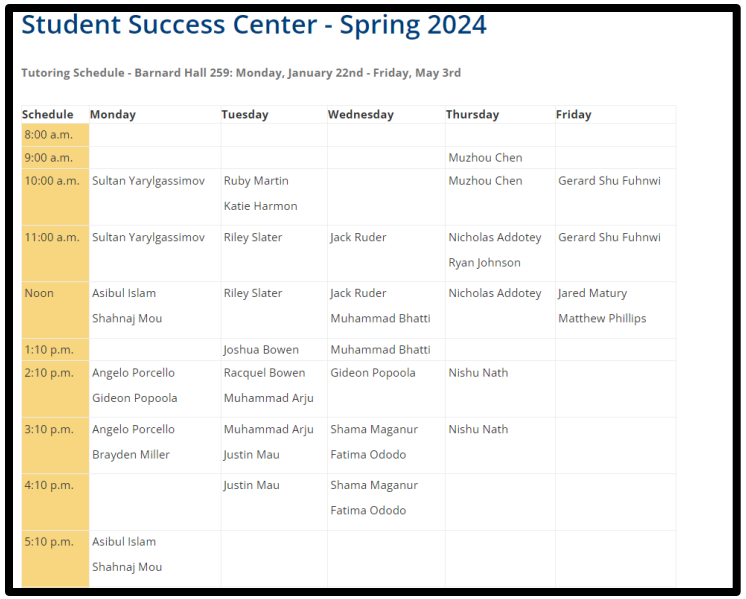
- They all have office hours in the **Computer Science Student Success Center (Barnard Hall 259)**



Student Success Center - Spring 2024

Tutoring Schedule - Barnard Hall 259: Monday, January 22nd - Friday, May 3rd

Schedule	Monday	Tuesday	Wednesday	Thursday	Friday
8:00 a.m.					
9:00 a.m.				Muzhou Chen	
10:00 a.m.	Sultan Yarylgassimov	Ruby Martin Katie Harmon		Muzhou Chen	Gerard Shu Fuhnwi
11:00 a.m.	Sultan Yarylgassimov	Riley Slater	Jack Ruder	Nicholas Addotey Ryan Johnson	Gerard Shu Fuhnwi
Noon	Asibul Islam Shahnaj Mou	Riley Slater	Jack Ruder Muhammad Bhatti	Nicholas Addotey	Jared Matury Matthew Phillips
1:10 p.m.		Joshua Bowen	Muhammad Bhatti		
2:10 p.m.	Angelo Porcello Gideon Popoola	Racquel Bowen Muhammad Arju	Gideon Popoola	Nishu Nath	
3:10 p.m.	Angelo Porcello Brayden Miller	Muhammad Arju Justin Mau	Shama Maganur Fatima Ododo	Nishu Nath	
4:10 p.m.		Justin Mau	Shama Maganur Fatima Ododo		
5:10 p.m.	Asibul Islam Shahnaj Mou				

- There will also be junior/senior CS lab assistants present during lab

THE TWO STATES OF EVERY PROGRAMMER

I AM A GOD.

I HAVE NO IDEA WHAT I'M DOING.

Hello World Program

```
public class HelloWorld {
	public static void main(String[] args) {
		// This is a comment
		System.out.println("Hello World");
	}
}
```

Java programs always start execution in `public static void main(String[] args)`

Code needs to go inside of the curley brackets { } Whitespace does not matter ☺

Declaring Variables

Primitive Data Types

- `int`
- `double`
- `boolean`
- `char`
- `float`

Non-Primitive Data Types

- `String`

```
String s = “Reese”;
String last_name =  “Pearsall”;
System.out.println(s + last_name)
```

Valid Variable Declaration

```
int i = 5;
int x;
int num = 125;

char grade = “A”;

boolean flag = true;
```

When we declare a variable, we **must** define the datatype as well

Invalid Variable Declaration

```
i = 5;  (data type is not declared)
int 2023year = 2023; (bad variable name)
char final = “F”; (bad variable name)
```

Operators

- + (Addition)
- - (Subtraction)
- * (Multiplication)
- / (Division)
- % (Modulo)
- + (String concatenation)
- ++ (Increment)
- -- (Decrement)

```
int x, y, answer;
x= 2;
y = 3;
answer = x + y;
```

Using the plus operator (+) between two values that are Strings will result in **String concatenation**

```
String x = "hi ";
String y = "there";
System.out.println(x + y);

>> hi there
```

Increment operator (++) will add 1 to a variable

```
int counter = 0;
System.out.println(counter);
counter++;
System.out.println(counter);
counter++;
System.out.println(counter);

>> 0
   1
   2
```

User input

We use Java's **`Scanner`** library to get user input

Remember to import the Scanner library!

```
import java.util.Scanner;

public class ScannerExample {

        public static void main(String Args[]) {
                Scanner scanner = new Scanner(System.in);  //Creates Scanner object
                System.out.println("Enter your name:");  //prompt user for name
                String input = scanner.next(); // Accepts user input, stores result in input
                System.out.println("Your name is:"+ input);
         }
}
```

In class exercise

1. Write a program that will take in a temperature in **Fahrenheit**. The Program should convert the temperature to **Celsius**, and print it out to the screen

$$°C = (°F - 32) \times \frac{5}{9}$$

2. Write a program that will ask the user for an amount of pennies, nickels, dimes, and quarters. The program should compute the total change value, and print it to the screen

```
Enter number of pennies:
2
Enter number of Nickels:
1
Enter number of dimes:
2
Enter number of quarters:
2
Total change:0.77 cents
```