

## Week 1 Research Java

**1. What is git? Why is it useful? What is the git workflow?** Git is a version control system which allows one or many people to work on the same project at once, being able to capture, change, and re-upload code seamlessly. It may act as a bookmark for both intended, and unintended consequences, being able to make changes or revert code. The workflow is: *Pull- Make Change- Stage (snapshot)- Push- Merge Master*. Github allows for easy upload and access for remote usage.

**2. What are the 8 primitive data types in Java? What makes them each unique? What values can they hold?**

1. **Byte**- 8-bits, allows use of whole value numbers from -128 to 127.
2. **Short**- 2 Bytes, allows for use of values between -32,768 and 32,767. Can save memory in large arrays.
3. **Long**- 8 bytes (64-bits), allows use of values between  $(-2^{63})$ , and  $(2^{63}-1)$  using unsigned longs equating 9.22 Quint. Can use up to  $2^{64}-1$  with unsigned longs.
4. **Int**- Default number data type. Has a minimum value of  $-2^{31}$ , and maximum  $2^{31}-1$ , or 2.147 Bill. Byte/Short will be promoted if their value is exceeded.
5. **Float**- 32-bit floating point. Less preferred option for decimals. Can be used to save memory. For precision decimals see `java.math.BigDecimal`.
6. **Double**- Default choice for decimal values. 64-bit floating point.
7. **Char (Character)**- Single 16-bit character, numerical values may range from 0 to 65,535. Wraps value of primitive in an object, may determine category (lowercase, uppercase, digit) to read, write, make changes, vice versa.
8. **Boolean**- Data type with True or false value, 1-bit size (not precisely defined). Can be useful for flags in loops, comparing values, and on/off situations.

@CoderSaty (2021) 'Difference Between byte, short, int and long Datatype in Java.' Available at <https://www.geeksforgeeks.org/difference-between-byte-short-int-and-long-datatype-in-java/> [verified 7 January 2023]

Oracle 'Primitive Data Types.' Available at [https://docs.oracle.com/javase/tutorial/java/nutsandbolts/datatypes.html#:~:text=short%3A%20The%20short%20data%20type,value%20of%2032%2C767%20\(inclusive\).](https://docs.oracle.com/javase/tutorial/java/nutsandbolts/datatypes.html#:~:text=short%3A%20The%20short%20data%20type,value%20of%2032%2C767%20(inclusive).) [verified 7 January 2023]

Oracle 'Class Character.' Available at <https://docs.oracle.com/javase/7/docs/api/java/lang/Character.html#:~:text=The%20Character%20class%20wraps%20a,letter%2C%20digit%2C%20etc.> [verified 7 January 2023]