

Programming Challenge

The programming question must be answered as a Java project in Visual Studio Code. As a starting point for the question, a template project has been set up for the students in the Team 294 GitHub repository: Team294/Java_Challenge_2023. You should create a **private fork** (not a branch) from this project into your own GitHub account and share the project with @robflippo on Github.

Make sure that all of your programs are clearly commented, including help text for each method! Strive to write code that is clear, efficient, uses standard Java style and indents, has well-named variables, and uses loops/arrays when appropriate.

Question 1 – Let's Roll the Dice

Write a random die roll generator for a standard 6-sided die (values 1, 2, 3, 4, 5, or 6). Print out the value for 20 random die rolls.

Hint: You may want to look up online the Java method `Math.random()`.

Example output:

- Roll 1 = 3
- Roll 2 = 1
- Roll 3 = 4
- Roll 4 = 2
- Roll 5 = 2
- Etc.

Question 2 – My Die Has Class

Write a Die class that emulates a die. Include methods such as:

- `Die()` : Default constructor, creates a 6-sided die
- `Die(int N)`: Constructor, creates an N-sided die
- `int numSides()`: Returns the number of sides on the die
- `int roll()`: Rolls the die and returns the rolled number
- `int readLastRoll()`: Reads the last number rolled. Returns -1 if the die has not been rolled yet
- Any other methods that you find interesting, such as the total number of die created, the color of the die, etc.

Write a program that creates and uses multiple Die objects. Be creative and have fun. Example: Roll a set of 3 die and print out the sum of the die values (3 to 18). Roll the set of die 1000 times and print out how many times each value was rolled.