

## Midterm 1 - In Class Practice

1. Write a loop that prints out the multiples of 3 that are greater than 0, less than 61, and even (all of these must be true for a number to be printed).
2. Write a function called `reverseArray` that takes an array of ints as a parameter and returns a copy of this array, but all the elements are in reverse order. So reversing the array `{2, 4, 6, 8}` would return `{8, 6, 4, 2}`.
3. Write a function called `countZeroRows` that takes a 2-d array of ints as a parameter and returns the number of rows that contain at least one zero. Note: this is not the same as "count all the zeros," this is "count the number of rows that have a zero."
4. Create a Die class that represents a 6-sided die that can be rolled to return a random integer between 1 and 6 (inclusive). The class should allow the user to:
  - a. construct a new die,
  - b. roll the die, generating a new number between 1 and 6,
  - c. retrieve the number facing up on the die without re-rolling it.

You may pick what instance variables and methods you want to use.

5. [Do this on paper.] Assume you have a class called `Date` that allows the user to store a calendar date (with a month, day of the month, and 4-digit year). Here's the API:
  - a. `public Date(int month, int day, int year): [constructor]:` Constructs a new `Date` object with the given month, day of the month, and year.
  - b. `public int getMonth(), public int getDay(), public int getYear():` getters for the month, day, and year.
  - c. `public boolean isBefore(Date otherDate):` returns true if this date is before the "otherDate" chronologically.
  - d. `public boolean equals(Date otherDate):` returns true if this date is the same date as the "otherDate."
  - e. `public int daysBetween(Date otherDate):` returns the number of calendar days between this date and the "otherDate." Assume this returns an int that is  $\geq 0$ .

Assume you are given the following `main()` function:

```
public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    System.out.println("Enter the month and day of your birthday: ");
    int m = scanner.nextInt();
    int d = scanner.nextInt();
}
```

Write the rest of the function that should do the following:

- Create a new `Date` representing the user's birthday in 2021.
- Create a new `Date` representing today (Oct 6, 2021). October = month #10.
- Use an if statement to compare the two dates and print out whether the user's birthday has happened already this year, hasn't happened yet, or is today. Also print out the number of days until the birthday (or the number of days past the birthday that today is).