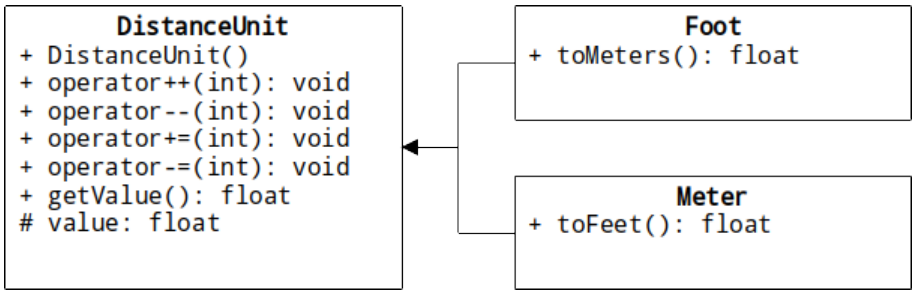
CENG241 Labwork 10

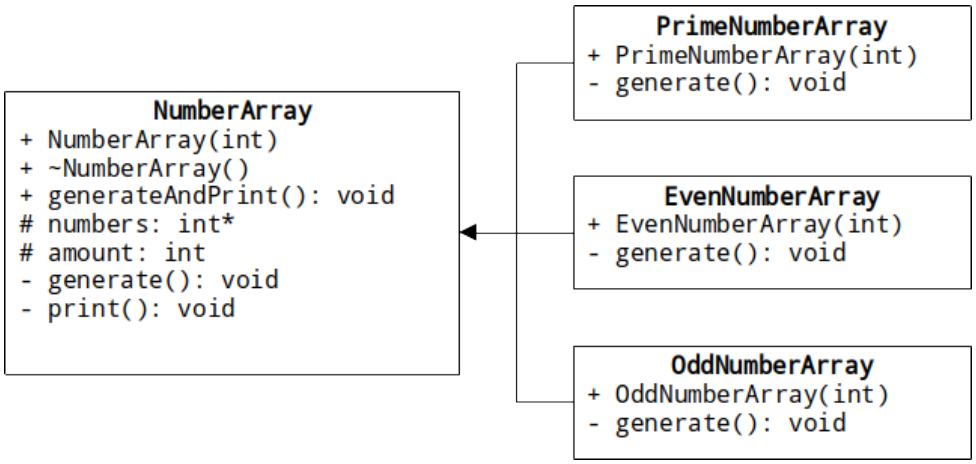
1. Implement the following classes:



   The default constructor initializes *value* as zero. The ++ and – operators should increase value by one, while += and -= operators should increase it by N. toMeters() and toFeet() functions in subclasses converts and returns the value respectively.

   Write a menu-driven program where the user chooses which type of distance unit to work with and perform different operations.

2. Implement the following classes:



   The constructors should receive *amount* as parameter and dynamically initialize *numbers* with *amount* integers. Each generate() function should perform and fill the *numbers* array differently:

   - **NumberArray:** random integers
   - **PrimeNumberArray:** random prime numbers
   - **EvenNumberArray:** random even numbers
   - **OddNumberArray:** random odd numbers

   print() functions should print the array. The generateAndPrint() function calls both generate() and print() functions itself because they are defined as private functions and are unavailable to outside the class.

   Write a simple program which initializes and displays all types of mentioned arrays on screen. Use dynamic binding appropriately.

Sample Run for Question 1:

```
1. Set distance to feet
2. Set distance to meters
Choice: 1

Distance: 0 feet
1. Move 1 foot forwards
2. Move 1 foot backwards
3. Move N foot forwards
4. Move N foot backwards
5. Convert to meters
6. Exit
Your choice: 3
Enter N: 4

Distance: 4 feet
1. Move 1 foot forwards
2. Move 1 foot backwards
3. Move N foot forwards
4. Move N foot backwards
5. Convert to meters
6. Exit
Your choice: 1

Distance: 5 feet
1. Move 1 foot forwards
2. Move 1 foot backwards
3. Move N foot forwards
4. Move N foot backwards
5. Convert to meters
6. Exit
Your choice: 4
Enter N: 2

Distance: 3 feet
1. Move 1 foot forwards
2. Move 1 foot backwards
3. Move N foot forwards
4. Move N foot backwards
5. Convert to meters
6. Exit
Your choice: 2

Distance: 2 feet
1. Move 1 foot forwards
2. Move 1 foot backwards
3. Move N foot forwards
4. Move N foot backwards
5. Convert to meters
6. Exit
Your choice: 5
2 feet: 0.6096 meters.

Distance: 2 feet
1. Move 1 foot forwards
2. Move 1 foot backwards
3. Move N foot forwards
4. Move N foot backwards
5. Convert to meters
6. Exit
Your choice: 6
Bye!
```

Sample Run 1 for Question 2:

```
Enter length for normal number array: 6
Enter length for prime number array: 11
Enter length for even number array: 7
Enter length for odd number array: 8
Normal numbers: 256 -> 756 -> 851 -> 758 -> 555 -> 246
Prime numbers : 97 -> 283 -> 509 -> 211 -> 199 -> 877 -> 541 -> 929 -> 439 -> 79 -> 11
Even numbers  : 882 -> 282 -> 0 -> 10 -> 486 -> 908 -> 472
Odd numbers   : 69 -> 481 -> 17 -> 717 -> 611 -> 77 -> 131 -> 97
```