Tutorial session 9
CSC 113
King Saud University
College of Computer and Information Sciences

- Do **not** use loops in any method except `main`.
- Do **not** use global variables
- Do **not** give the class `recursor` any attributes
- Do **not** use **static** variables in any method.

1 Integer manipulation

Write the class IntRecursor and implement its following `static` recursive functions.

1.1 Exercise 1

Write the `static` function `digitCount` which receives one integer and recursively calculate the sum of the integer's digits. Your main function should output:

```
Enter an integer: 231
231 has 3 digits.
```

1.2 Exercise 2

Write the `static` function `digitSum` which receives one integer and recursively calculate the sum of the integer's digits. Your main function should output:

```
Enter an integer: 231
The sum of the digits of 231 is 6
```

1.3 Exercise 3

Write the `static`, recursive function `reverseDigits` which receives one integer and returns an integer with the digits reversed. Your main function should output:

```
Enter an integer: 231
The number 231 with reversed digits is 132
```

- **Hint:** Use the methods `power` and `digitCount`

1.4 Exercise 4

Write the `static`, recursive method `palindrome` which receives an integer returns `True` if the integer is a palindrome, and false otherwise. Your main function should output:

```
Enter an integer: 125
125 is not a palindrome
```

```
Enter an integer: 12321
12321 is a palindrome
```

1.5 Exercise 5

Write the `static`, recursive method `toBinary` which receives an integer and returns its representation in binary in the form of an integer.

- Note: An `int` in Java has 32 bits.

Your main function should output:

```
Enter an integer: 52
The number 52 in binary representation is: [110100]
```

1.6 Exercise 6

Write a `main` function to test all the implemented recursive methods.