Code : 1

```
package Topic_03_NumberSystem;

import java.util.*;

public class A_DigitFrequency {

	public static void main(String[] args) {
		Scanner scn = new Scanner(System.in);
		int n = scn.nextInt();
		int d = scn.nextInt();

		int freq = getDigitFrequency(n, d);
		System.out.println(freq);
	}

	public static int getDigitFrequency(int n, int digit) {
		// write code here
		int c = 0;
		while (n > 0) {
			int rem = n % 10;
			if (rem == digit)
				c++;
			n = n / 10;
		}
		return c;
	}

}
```

Code : 2

```
package Topic_03_NumberSystem;

import java.util.Scanner;

public class B_DecimalToAnyBase {

	public static void main(String[] args) {
		Scanner scn = new Scanner(System.in);
		int n = scn.nextInt();
		int b = scn.nextInt();
		int dn = getDecimalInBase(n, b);
		System.out.println(dn);
	}

	private static int getDecimalInBase(int n, int b) {
		// TODO Auto-generated method stub
		int rv = 0;
		int d = 0;
		int p = 1;
		while (n > 0) {
			d = n % b;
			n = n / b;

			rv = rv + (d * p);
			p = p * 10;
		}
		return rv;
	}

}
```

Code : 3

```
package Topic_03_NumberSystem;

import java.util.Scanner;

public class C_AnyBaseToDecimal {

	public static void main(String[] args) {
		Scanner scn = new Scanner(System.in);
		int n = scn.nextInt();
		int b = scn.nextInt();
		int dn = getBaseInDecimal(n, b);
		System.out.println(dn);
	}

	private static int getBaseInDecimal(int n, int b) {
		// TODO Auto-generated method stub
		int rv = 0;
		int p = 1;
		while (n > 0) {
			int rem = n % 10;
			n = n / 10;
			rv = rv + (rem * p);
			p = p * b;
		}
		return rv;
	}

}
```

Code : 4

```
package Topic_03_NumberSystem;

import java.util.Scanner;

public class D_AnyBaseToAnyBase {
	public static void main(String[] args) {
		Scanner scn = new Scanner(System.in);
		int n = scn.nextInt();
		int srcBase = scn.nextInt();
		int destBase = scn.nextInt();
		int rv = anyBaseToDecimal(n, srcBase);
		rv = getDecimalToAnyBase(rv, destBase);
		System.out.println(rv);
	}

	private static int getDecimalToAnyBase(int n, int b) {
		// TODO Auto-generated method stub
		int rv = 0;
		int d = 0;
		int p = 1;
		while (n > 0) {
			d = n % b;
			n = n / b;

			rv = rv + (d * p);
			p = p * 10;
		}
		return rv;
	}

	private static int anyBaseToDecimal(int n, int b) {
		// TODO Auto-generated method stub
		int rv = 0;
		int p = 1;
		while (n > 0) {
			int rem = n % 10;
			n = n / 10;
			rv = rv + (rem * p);
			p = p * b;
		}
		return rv;
	}

}
```

Code : 5

```
package Topic_03_NumberSystem;

import java.util.*;

public class E_AnyBaseAddition {
	public static void main(String[] args) {
		Scanner s = new Scanner(System.in);
		int b = s.nextInt();
		int n1 = s.nextInt();
		int n2 = s.nextInt();
		System.out.println(getAnyBaseAddition(b, n1, n2));
	}

	public static int getAnyBaseAddition(int b, int n1, int n2) {
		int rv = 0;
		int c = 0;
		int p = 1;
		while (n1 > 0 || n2 > 0) {
			int d1 = n1 % 10;
			int d2 = n2 % 10;

			int add = d1 + d2 + c;
			if (add >= b) {
				c = 1;
				add = add % b;
				rv = rv + (add * p);
			} else {
				c = 0;
				rv = rv + (add * p);
			}
			n1 = n1 / 10;
			n2 = n2 / 10;
			p = p * 10;
		}
		if (c == 1)
			rv = rv + (c * p);
		return rv;
	}
}
```

Code : 6

```
package Topic_03_NumberSystem;

import java.util.*;

public class F_AnyBaseSubtraction {
	public static void main(String[] args) {
		Scanner scn = new Scanner(System.in);
		int b = scn.nextInt();
		int n1 = scn.nextInt();
		int n2 = scn.nextInt();

		int d = getDifference(b, n1, n2);
		System.out.println(d);
	}

	public static int getDifference(int b, int n1, int n2) {
		int rv = 0;
		int borrow = 0;
		int p = 1;
		while (n2 > 0) {
			int d2 = n2 % 10;
			int d1 = n1 % 10;
			d2 = d2 - borrow;
			int d = d2 - d1;
			if (d < 0) {
				borrow = 1;
				d = d + b;
			} else {
				borrow = 0;
				d = d + 0;
			}
			rv = rv + d * p;
			p = p * 10;

			n1=n1/10;
			n2=n2/10;
		}
		return rv;
	}
}
```

Code : 7

```
package Topic_03_NumberSystem;

import java.util.*;

public class G_AnyBaseMultiplication {

	public static void main(String[] args) {
		Scanner scn = new Scanner(System.in);
		int b = scn.nextInt();
		int n1 = scn.nextInt();
		int n2 = scn.nextInt();

		int d = getProduct(b, n1, n2);
		System.out.println(d);
	}

	public static int getProduct(int b, int n1, int n2) {
		int rv = 0, p = 1;

		while (n2 > 0) {
			int d = n2 % 10;
			int temp = getProducts(b, n1, d);
			temp = temp * p;
			rv = getAnyBaseAddition(b, rv, temp);
			n2 = n2 / 10;
			p = p * 10;
		}
		return rv;
	}

	public static int getProducts(int b, int n1, int d2) {
		int rv = 0, p = 1, d = 0, c = 0;
		while (n1 > 0 || c > 0) {
			int d1 = n1 % 10;
			d = d1 * d2 + c;
			if (d >= b) {
				c = d / b;
				d = d % b;
			} else {
				c = 0;
				d = d;
			}
			rv = rv + d * p;
			n1 = n1 / 10;
			p = p * 10;
		}
		return rv;
	}

	public static int getAnyBaseAddition(int b, int n1, int n2) {
		int rv = 0;
		int c = 0;
		int p = 1;
		while (n1 > 0 || n2 > 0) {
			int d1 = n1 % 10;
```

```
                int d2 = n2 % 10;

                int add = d1 + d2 + c;
                if (add >= b) {
                        c = 1;
                        add = add % b;
                        rv = rv + (add * p);
                } else {
                        c = 0;
                        rv = rv + (add * p);
                }
                n1 = n1 / 10;
                n2 = n2 / 10;
                p = p * 10;
        }
        if (c == 1)
                rv = rv + (c * p);
        return rv;
    }
}
```