Type casting

Explicit conversion

↳ Assigning a larger data type to a smaller data type

Example

```
double d = 100.04;
int i = (int) d;
```

larger data type

↳ smaller data type

( ) → caste operator.

Implicit conversion

↳ Opposite of explicit.
Smaller data type - larger

Example

```
int i = 100;
long l = i;
```

} → Compiler converts it for y

Explicit is also called Narrowing

Implicit is also called widening.

Type promotion

Type promotion is performed during method overloading. When the datatype is not the same, you promote one datatype to another.

Method overloading -> Multiple methods with same name, different parameters

```
① void subtract(int x, int y)
  {
      System.out.println(x - y);
  }

② void subtract(int x, int y, int z)
  {
    System.out.println(x - y - z);
  }

③ void subtract(long x, float y){
      System.out.println(x - y);
  }
```

Same name different parameters

```
subtract(10, 20);      -> calling ①
subtract(10, 20, 30);  -> calling ②
subtract(10, 30.4);    -> calling ③
```

Spy Numbers

What are spy numbers?

given a number 1248.
Sum of all digits MUST be equal to product of all digits.

1 + 2 + 4 + 8 = 15
1 x 2 x 4 x 8 = 64
} Not a spy Number.

given 1124.

1 + 1 + 2 + 4 = 8
1 * 1 * 2 * 4 = 8.
} SPY Number.

STEPS :-

① Declare 2 variables sum and product.
int sum = 0;
int product = 1;

② Get input 'n' from user. (Scanner class)
③ Find the last digit (n %. 10)
④ Add last digit to sum.
⑤ Multiply last digit with variable product.
⑥ Repeat this last 2 steps until n becomes 0.

Program

```
int sum = 0;
int product = 1;
Scanner input = new Scanner (System.in);
int n = input.nextInt();

while (n > 0)
{
    int lastDigit = n % 10;  // Gets Last digit
    sum += lastDigit;  // Add to sum
    product *= lastDigit;  // Multiply to product

    n = n/10;  // Remove last digit.
}

if (sum == product)
{
    System.out.println("This is a spy number");
}
```

Modulo finds remainder

Note:-

Since n is an integer, dividing it by 10 will remove the last digit.

Modulo operator (%) finds remainder.

Example:-

$$\begin{array}{r} 112 \\ 10\overline{)1124} \\ 1120 \\ \hline (4) \end{array}$$

→ {last digit}