VILNIAUS TECHNOLOGIJŲ IR VERSLO
PROFESINIO MOKYMO CENTRAS

03 - ŠAKOTIEJI ALGORITMAI

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Turinys

- Lyginimo operatoriai;
- *boolean* tipas;
- Šakotieji algoritmai (`if-else` ir `switch`);
- AND
- OR
- Didžiausios/mažiausios reikšmės paieškos algoritmas

Lyginimo operatoriai | Relational Operators

```
(a == b)   // (ar lygu)
(a != b)   // (ar nelygu)
(a > b)    // (a daugiau už b)
(a >= b)   // (a daugiau arba lygu b)
(a < b)    // (a mažiau už b)
(a <= b)   // (a mažiau arba lygu už b)
```

boolean tipo kintamasis

```
int first = 1;
int second = 3;

boolean isGreater = first > second;

System.out.println(isGreater);
```

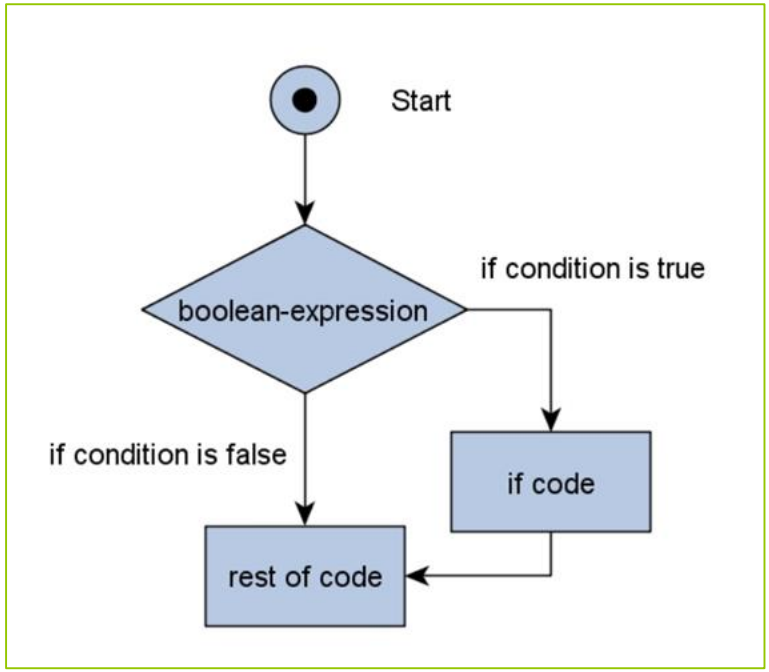
TRUE

FALSE

Šakotieji algoritmai (if)

```
// if-then
if ( booleanExpression ) {
   true-block ;
}
```

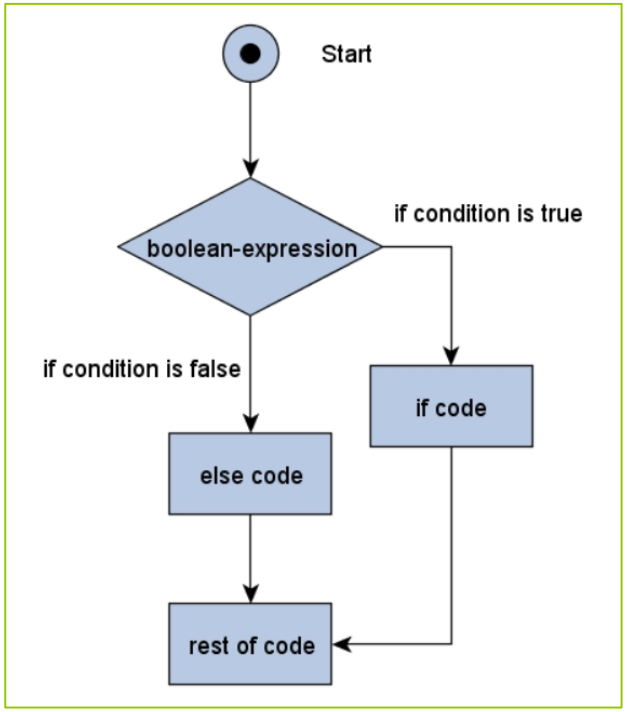
```
if (mark >= 50) {
   System.out.println("Congratulation!");
   System.out.println("Keep it up!");
}
```



Šakotieji algoritmai (if-else)

```
// if-then-else
if ( booleanExpression ) {
   true-block ;
} else {
   false-block ;
}
```

```
if (mark >= 50) {
   System.out.println("Congratulation!");
   System.out.println("Keep it up!");
} else {
   System.out.println("Try Harder!");
}
```

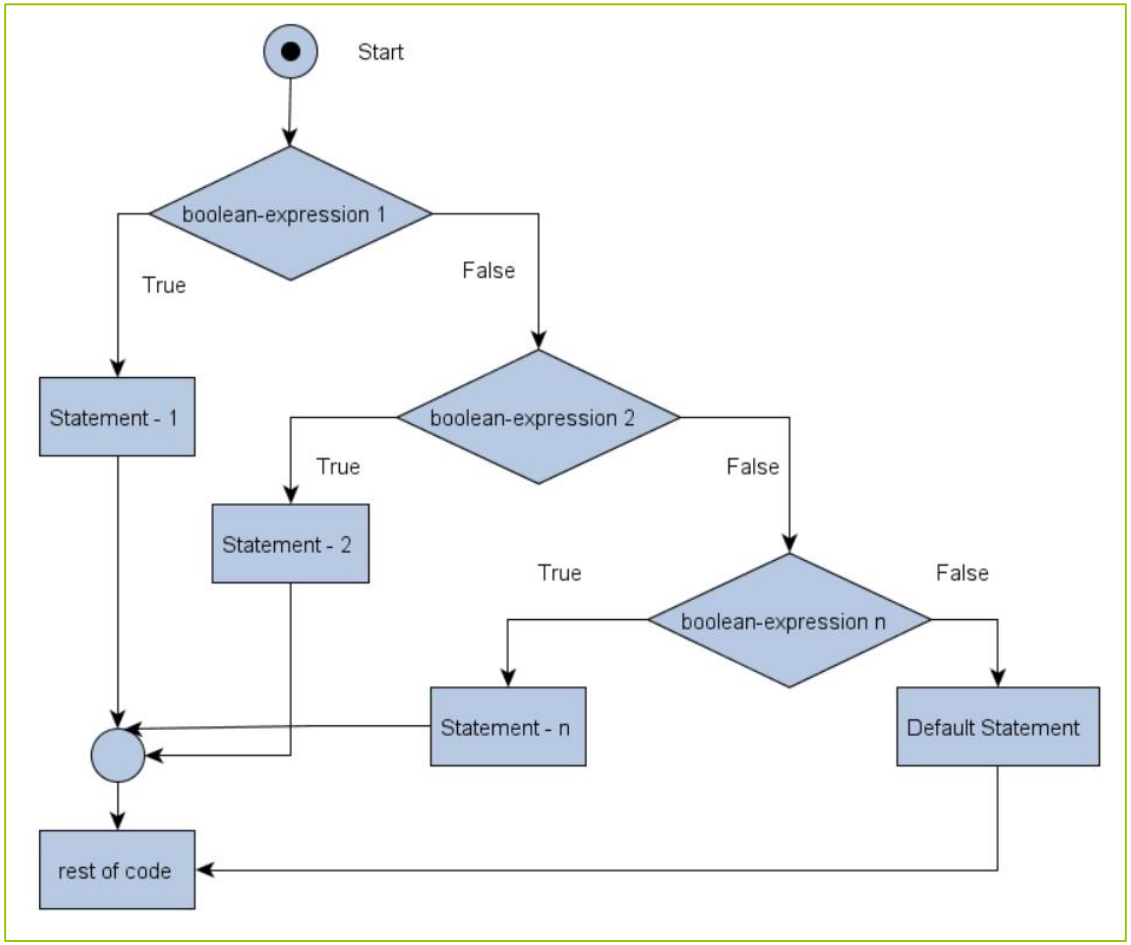


Šakotieji algoritmai (if-else ladder)

```
// nested-if
if ( booleanExpr-1 ) {
   block-1 ;
} else if ( booleanExpr-2 ) {
   block-2 ;
} else if ( booleanExpr-3 ) {
   block-3 ;
} else if ( booleanExpr-4 ) {
   ......
} else {
   elseBlock ;
}
```

```
if (mark >= 80) {
   System.out.println("A");
} else if (mark >= 70) {
   System.out.println("B");
} else if (mark >= 60) {
   System.out.println("C");
} else if (mark >= 50) {
   System.out.println("D");
} else {
   System.out.println("F");
}
```

Šakotieji algoritmai (if-else ladder)



Pavyzdys (1)

```
int number = 11;

if (number > 10) System.out.println("The number was greater than 10");
```

```
int number = 11;

if (number > 10) {
    System.out.println("The number was greater than 10");
}
```

Pavyzdys (2)

```java
int number = 4;

if (number > 5) {
    System.out.println("Your number is greater than five!");
} else {
    System.out.println("Your number is equal to or less than five!");
}
```

```java
int number = 4;

if (number > 5) {
    System.out.println("Your number is greater than five!");
    System.out.println("...");
    System.out.println("...");
} else {
    System.out.println("Your number is equal to or less than five!");
    System.out.println("...");
    System.out.println("...");
}
```

Pavyzdys (3)

```
int number = 3;

if (number == 1) {
    System.out.println("The number is one.");
} else if (number == 2) {
    System.out.println("The number is two.");
} else if (number == 3) {
    System.out.println("The number is three!");
} else {
    System.out.println("Quite a lot!");
}
```

AND &&

```
System.out.println("Is the number between 5-10?");
int number = 7;

if (number > 4 && number < 11) {
    System.out.println("Yes! :)");
} else {
    System.out.println("Nope :(");
}
```

`(sąlyga1 && sąlyga2)`

Jeigu **abi sąlygos yra teisingos**,

tai visa (bendra) sąlyga yra teisinga

Didžiausios/mažiausios reikšmės paieška

```
int a = 10, b = 15, c = 5;
int max;

if((a > b) && (a > c)){
    max = a;
}else if ((b > c) && (b > a)){
    max = b;
}else
    max = c;
System.out.println("Max: " + max);
```

OR ||

```
System.out.println("Is the number less than 0 or greater than 100?");
int number = 145;

if (number < 0 || number > 100) {
    System.out.println("Yes! :)");
} else {
    System.out.println("Nope :(");
}
```

`(sąlyga1 || sąlyga2)`

Jeigu **nors viena sąlyga teisinga**,

tai visa (bendra) sąlyga yra teisinga

LOGICAL OPERATORS

Operators && (AND)	Operator || (OR)	Operator ! (NOT)
true && true → true true && false → false false && true → false false && false → false true && true && false → false	true || true → true true || false → true false || true → true false || false → false false || false || true → true	!true → false !false → true

String tipo kintamųjų palyginimas

```
String text = "course";

if (text.equals("marzipan")) {
    System.out.println("The variable text contains the text marzipan");
} else {
    System.out.println("The variable text does not contain the text marzipan");
}
```

```
String text = "course";
String anotherText = "horse";

if (text.equals(anotherText)) {
    System.out.println("The texts are the same!");
} else {
    System.out.println("The texts are not the same!");
}
```

Šakotieji algoritmai (2)

```
// switch-case-default
switch ( selector ) {
   case value-1:
      block-1; break;
   case value-2:
      block-2; break;
   case value-3:
      block-3; break;
   ......
   case value-n:
      block-n; break;
   default:
      default-block;
}
```

```
char oper; int num1, num2, result;
......
switch (oper) {
   case '+':
      result = num1 + num2; break;
   case '-':
      result = num1 - num2; break;
   case '*':
      result = num1 * num2; break;
   case '/':
      result = num1 / num2; break;
   default:
      System.err.println("Unknown operator);
}
```

Pavyzdys (4)

```
char grade = 'C';

  switch(grade) {
     case 'A' :
        System.out.println("Excellent!");
        break;
     case 'B' :
     case 'C' :
        System.out.println("Well done");
        break;
     case 'D' :
        System.out.println("You passed");
     case 'F' :
        System.out.println("Better try again");
        break;
     default :
        System.out.println("Invalid grade");
  }
  System.out.println("Your grade is " + grade);
```

03 – Praktiniai darbai

- 03 - NPIK - Sakotieji algoritmai (PraktikaEN)
- 03 - NPIK - Sakotieji algoritmai (PraktikaLT)