Pseudocode

1. Review
2. Pseudocode Conventions:
    - Algorithm Header // Name, Parameters
    - Purpose, Pre and Post
    - Statement Constructs // Sequence, Selection, Loop
    - Variables
    - Operators // C/C++ operators

Pseudocode is one of the popular ways to represent algorithms:

- easy to read
- easy to write
- focus on the logic
- omit details

There is no standard Pseudocode.

It may vary in style

- from “formatted prose” // English like

```
Add 1 to num.
```

- to “code oriented”

```
num = num + 1
```

- C/C++ style

```
num += 1
num++
```

```
Algorithm checkEven ( ary, n )
```

This algorithm checks if there is at least one even number in **ary**
Pre : ary – a non-empty array of integer numbers
n – the actual size of the array
Post: return true or false

```
   oneEven = false
   i = 0
   loop( i < n && oneEven == false )
      if( ary[i] is even )
          oneEven = true
      end if
      i++
   end loop
   return oneEven
end checkEven
```

Algorithm Header

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```

Purpose, Pre and Post Conditions

```
Algorithm checkEven ( ary, n )
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      if( ary[i] is even )
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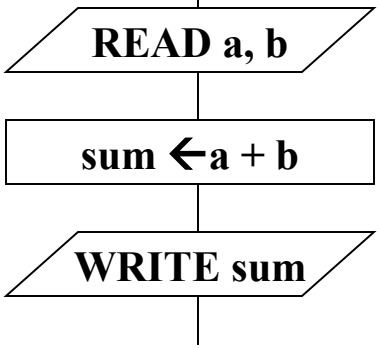
      end if
      i++
   end loop
   return oneEven
end checkEven
```

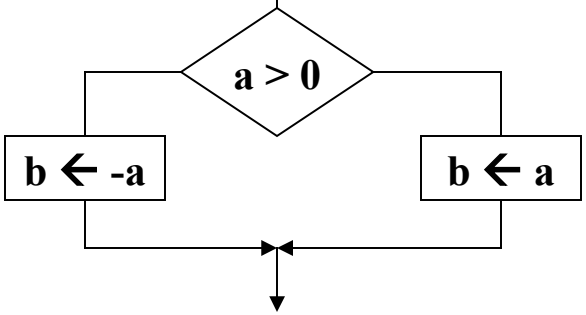
structured programming – one of the structured programming requirements is to write any algorithm using only three constructs

(without using break, continue, and goto):

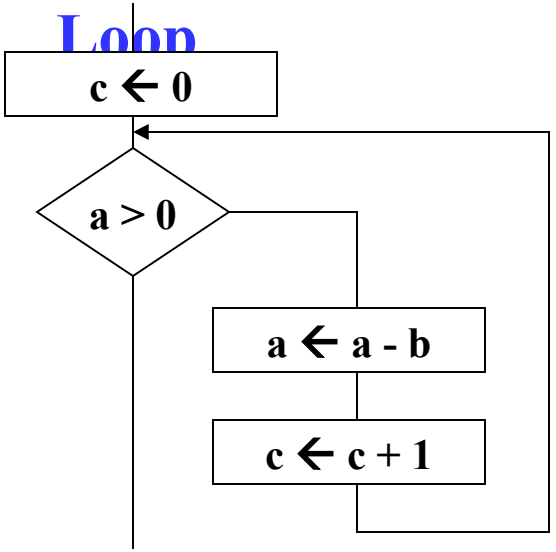
Sequence



Selection



Loop



This theorem (known as the Structured Program Theorem) was demonstrated by two mathematicians: Corrado Bohm and Giuseppe Jacopini, in 1966.

In 1968 Edsger Dijkstra wrote the article "Go To Statement Considered Harmful" that emphasized on the importance of structured programming.

structured programming – one of the structured programming requirements is to write any algorithm using only three constructs

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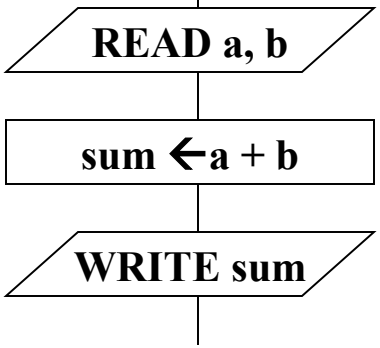
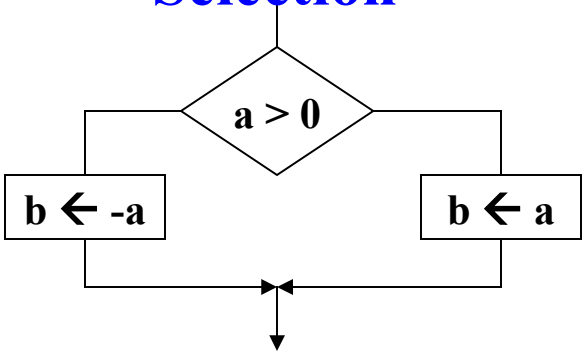
Sequence



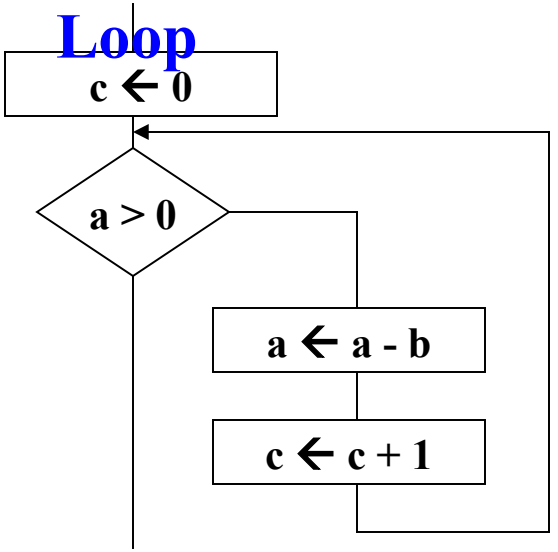

```
read( a, b )
sum = a + b
write( sum )
```

Selection




```
if( a > 0 )
    b = a
else
    b = -a
end if
```

Loop




```
c = 0
loop( a > 0 )
    a = a - b
    c = c + 1
end loop
```

```
Algorithm checkEven ( ary, n )
```

This algorithm checks if there is at least one even number in **ary**
Pre : ary – a non-empty array of integer numbers
n – the actual size of the array
Post: **return** true or false

```
  oneEven = false // No declaration!
  i = 0
  loop( i < n && oneEven == false )
     if( ary[i] is even )
          oneEven = true
     end if
     i++
  end loop
  return oneEven
end checkEven
```

```
Algorithm checkEven ( ary, n )
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This algorithm checks if there is at least one even number in **ary**
Pre : ary – a non-empty array of integer numbers
n – the actual size of the array
Post: return true or false

```
  oneEven = false // = assign
  i = 0                 // && logical AND
  loop( i < n && oneEven == false ) // == equal to
     if( ary[i] is even )
         oneEven = true
     end if
     i++ // ++ increment
  end loop
  return oneEven
end checkEven
```