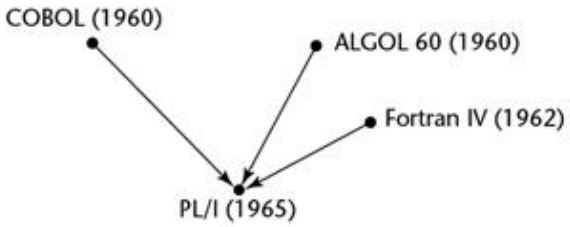
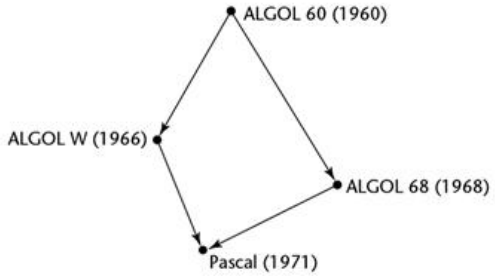
Evolution of the Major Programming Languages – Chapter 2 (continued)

PL/I



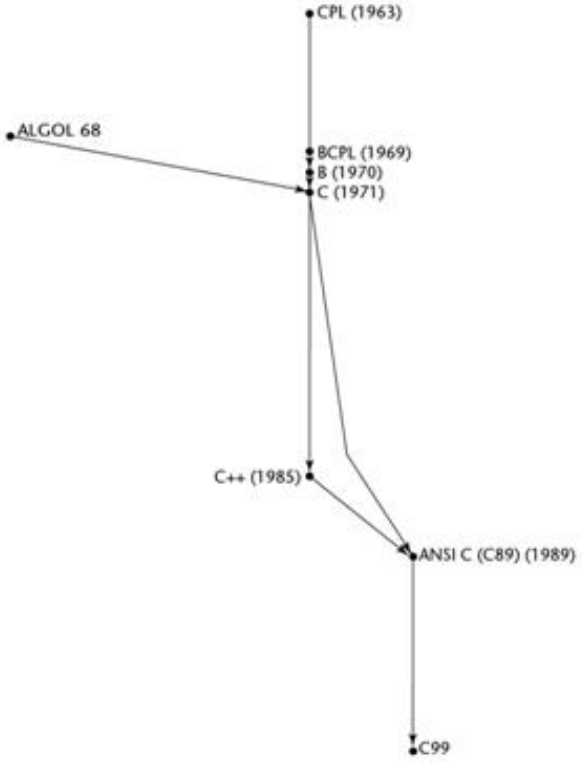

```
/*  PL/I Example program
    Input:     An Integer less than 100 followed by a list of that many Integer values
    Output:    The number of list values greater than the average of all list values  */
PLIEX:  PROCEDURE OPTIONS (MAIN);
        DECLARE INTLIST (1:99) FIXED.
        DECLARE (LISTLEN, COUNTER, SUM, AVERAGE, RESULT) FIXED;
        RESULT = 0;
        SUM = 0;
        GET LIST (LISTLEN);
        IF ( LISTLEN > 0 ) & ( LISTLEN < 100 ) ) THEN
/*  Read input data into an array and computer its sum  */
                DO COUNTER = 1 TO LISTLEN;
                        GET LIST ( INTLIST( Counter ) );
                        SUM = SUM + INTLIST( Counter );
                END;
/*  Compute the average  */
                AVERAGE = SUM / LISTLEN;
/*  Count the values that are greater than the average  */
                DO COUNTER = 1 TO LISTLEN;
                        IF INTLIST( COUNTER ) > AVERAGE THEN
                                RESULT = RESULT + 1;
                END;
/*  Print the result  */
                PUT SKIP LIST ( 'Number of values > Average is: ' );
                PUT LIST ( RESULT );
        ELSE
                PUT SKIP LIST ( 'Error – list length is not legal' );
END PLIEX;
```

PASCAL




```
{  Pascal Example program
   Input:      An Integer less than 100 followed by a list of that many Integer values
   Output:     The number of list values greater than the average of all list values  }
program pasex (input, output);
type   IntListType = array [1..99] of integer;
var    intList : IntListType;
       listLen, counter, sum, average, result : integer;
begin
       result := 0;
       sum := 0;
       readln( listLen );
       if ( listLen > 0 ) and ( listLen < 100 ) then begin
{  Read input data into an array and computer its sum  }
              for counter := 1 to listLen do begin
                     readln( intList[ counter ] );
                     sum := sum + intList[ counter ];
              end;
{  Compute the average  }
              average := sum div listLen;              {  / div mod  }
{  Count the values that are greater than the average  }
              for counter := 1 to listLen do begin
                     if intList[ counter ] > average then
                            result := result + 1;
              end;
{  Print the result  }
              writeln( 'Number of values > Average is: ', result );
       else
              writeln( 'Error – list length is not legal' );
end.
```

C

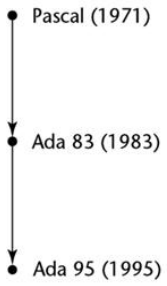

CPL (1963)
ALGOL 68
BCPL (1969)
B (1970)
C (1971)
C++ (1985)
ANSI C (C89) (1989)
C99

```
/*  C Example program
    Input:      An Integer less than 100 followed by a list of that many Integer values
    Output:   The number of list values greater than the average of all list values  */
void main( void ) {
        int intList[99], listLen, counter, sum, average, result;
        result = 0;
        sum = 0;
        scanf( "%d", &listLen );
        if ( ( listLen > 0 ) && ( listLen < 100 ) ) {
/*  Read input data into an array and computer its sum  */
                for ( counter = 0; counter < listLen; counter++ ) {
                        scanf( "%d", &intList[ counter ] );
                        sum += intList[ counter ];
                }
/*  Compute the average  */
                average = sum / listLen;
/*  Count the values that are greater than the average  */
                for ( counter = 0; counter < listLen; counter++ ) {
                        if ( intList[ counter ] > average ) {
                                result++;
                        }
                }
/*  Print the result  */
                printf( "Number of values > Average is: %d\n", result );
        }
        else {
                printf( "Error – list length is not legal\n" );
        }
}
```

Perl

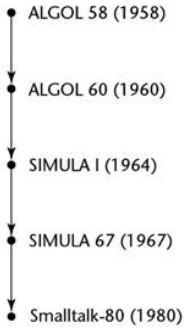
```
#  Perl Example program
#  Input:       An Integer less than 100 followed by a list of that many Integer values
#  Output:     The number of list values greater than the average of all list values  */
($sum, $result) = (0, 0);
$listlen = <STDIN>;
if ( ( $listlen > 0 ) && ( $listlen < 100 ) ) {
#  Read input data into an array and computer its sum
        for ( $counter = 0; $counter < $listlen; $counter++ ) {
                $intlist[ $counter ] = <STDIN>;
                $sum = $sum + $intlist[ $counter ];
        }
#  Compute the average
        $average = $sum / $listlen;
#  Count the values that are greater than the average
        foreach $num ( @intlist ) {
                if ( $num > $average ) {
                        $result++;
                }
        }
#  Print the result
        print “Number of values > Average is: $result \n”;
}
else {
        print “Error – list length is not legal \n”;
}
```

Ada



```
--  Ada Example program
--  Input:      An Integer less than 100 followed by a list of that many Integer values
--  Output:    The number of list values greater than the average of all list values  }
with Ada.Text_IO, Ada.Integer.Text_IO
use Ada.Text_IO, Ada.Integer.Text_IO
procedure Ada_Ex is
        type    IntListType = array (1..99) of Integer;
        intList : IntListType;
        listLen, sum, average, result : integer;
begin
        result := 0;
        sum := 0;
        Get ( listLen );
        if ( listLen > 0 ) and ( listLen < 100 ) then
--  Read input data into an array and computer its sum
                for counter := 1 .. listLen loop
                        Get ( intList( counter ) );
                        sum := sum + intList( counter );
                end loop;
--  Compute the average
                average := sum / listLen;
--  Count the values that are greater than the average
                for counter := 1 .. listLen loop
                        if intList( counter ) > average then
                                result := result + 1;
                        end if;
                end loop;
--  Print the result
                Put ( “Number of values > Average is: ” );
                Put ( result );
                New_Line;
        else
                Put_Line( “Error – list length is not legal” );
        end if;
end Ada_Ex;
```

Smalltalk




```
"Smalltalk Example Program"
"The following is a class definition, instantiations of which can be drawn
equilateral polygons of any number of sides"
class name                      Polygon
superclass                      Object
instance variable names         ourPen
                                numSides
                                sideLength
"Class methods"
        "Create an instance"
        new
                ^ super new getPen
        "Get a pen for drawing polygons"
        getPen
                ourPen <- Pen new defaultNib: 2
        "Instance methods"
        "Draw a polygon"
        draw
                numSides timesRepeat: [ourPen go: sideLength;
                                        turn: 360 // numSides ]
        "Set length of sides"
        length: len
                sideLength <- len
        "Set number of sides"
        sides: num
                numSides <- num
```

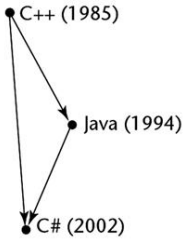
Java


```
/**  Java Example program
     Input:    An Integer less than 100 followed by a list of that many Integer values
     Output: The number of list values greater than the average of all list values  */
import java.io.*;
class IntSort {                                                    //  filename IntSort.java
        public static void main( String [] args ) throws IOException {
                DataInputStream in = new DataInputStream( System.in );
                int listLen, sum = 0, average, result = 0;
                int[] intList = new int[99];
                listLen = Integer.parseInt( in.readLine( ) );
                if ( ( listLen > 0 ) && ( listLen < 100 ) ) {
/*  Read input data into an array and computer its sum  */
                        for ( int counter = 0; counter < listLen; counter++ ) {
                                intList[ counter ] = Integer.parseInt( in.readLine( ) );
                                sum += intList[ counter ];
                        }
//  Compute the average
                        average = sum / listLen;
//  Count the values that are greater than the average
                        for ( int counter = 0; counter < listLen; counter++ ) {
                                if ( intList[ counter ] > average ) {
                                        result++;
                                }
                        }
//  Print the result
                        System.out.println("Number of values > Average is: " + result);
                }
                else {
                        System.out.println( "Error – list length is not legal" );
                }
        }
}
```

JavaScript

```
<?xml version="1.0" encoding="utf-8"?>
<!DOCTYPE html PUBLIC "-//w3c//DTD XHTML 1.1 //EN"
        http://www.w3.org/TR/xhtml11/DTD/xhtml11-script.dtd>
<!--  JavaScript Example program – example.html
      Input:    An Integer less than 100 followed by a list of that many Integer values
      Output: The number of list values greater than the average of all list values -->
<html>
<head><title> Example </title>
</head>
<body>
<script type = "text/javascript">
<!--
var intList = new Array(99);
var listLen, counter, sum = 0, average, result = 0;
listLen = prompt ( "Please type the length of the input list", " " );
if ( ( listLen > 0 ) && ( listLen < 100 ) ) {
//  Read input data into an array and computer its sum  */
        for ( counter = 0; counter < listLen; counter++ ) {
                intList[ counter ] = prompt ( "Please type in a number", " " );
                sum += parseInt( intList[ counter ] );
        }
//  Compute the average
        average = sum / listLen;
//  Count the values that are greater than the average
        for ( counter = 0; counter < listLen; counter++ ) {
                if ( intList[ counter ] > average ) {
                        result++;
                }
        }
//  Print the result
        document.write( "Number of values > Average is: ", result, "<br />" );
}
else {
        document.write( "Error – list length is not legal <br />" );
}
</script>
</body>
</html>
```

C#




```
//  C# Example program
//  Input:      An Integer less than 100 followed by a list of that many Integer values
//  Output:    The number of list values greater than the average of all list values
using System;
public class IntSort {
        static void Main( ) {
                int listLen, sum = 0, average, result = 0;
                int[] intList = new int[99];
                listLen = Int32.Parse( Console.readLine( ) );
                if ( ( listLen > 0 ) && ( listLen < 100 ) ) {
//  Read input data into an array and computer its sum
                        for ( int counter = 0; counter < listLen; counter++ ) {
                                intList[ counter ] = Int32.Parse( Console.readLine( ) );
                                sum += intList[ counter ];
                        }
//  Compute the average
                        average = sum / listLen;
//  Count the values that are greater than the average
                        foreach ( int num in intList ) {
                                if ( num > average ) {
                                        result++;
                                }
                        }
//  Print the result
                        Console.Writeline("Number of values > Average is: " + result);
                }
                else {
                        Console.Writeline( "Error – list length is not legal" );
                }
        }
}
```