
an external tree visitor pattern"

Posted by [wildbill](#) on Thu, 02 Nov 2023 08:47:14 GMT

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Creating Gear: An interpreter written in Free Pascal using an external tree visitor pattern
Jeroen de Haan

<https://github.com/jdehaan2014/GearLanguage/tree/master/interpreter>

<https://cloud.mail.ru/public/1KND/xbMLrR7a4>

This is a no-nonsense book about creating an interpreted programming language, named "Gear", using an external visitor pattern. Why Gear? No particular reason, I just like the sound of it...

In this book I won't describe a lot of theory, as there are plenty of good books out there. As a matter of fact, I do recommend reading a few of them, such as:

- Writing Compilers and Interpreters, A software engineering approach (Ronald Mak)
- Language Implementation Patterns (Terence Parr)

Then, there are hands-on websites/blogs that describe and create an interpreter on-the-go:

- Let's build a simple interpreter (<https://ruslanspivak.com/lbasi-part1/>) (Ruslan Spivak)
- Crafting Interpreters (<http://craftinginterpreters.com>) (Bob Nystrom)

These books/blogs use Java or Python as programming language.

The code in this book is based on the programming language Object Pascal, a modern pascal version, and the free downloadable IDE 'Lazarus'. Lazarus/Free Pascal is available for Windows, Linux, OSX, and many other Operating Systems. It's slogan is: 'Write once, compile anywhere'! The website and download links are available at: <http://www.lazarus-ide.org/index.php>. For this book I use version 2.0.4 (or later) of Lazarus and version 3.04 (or later) of Free Pascal.

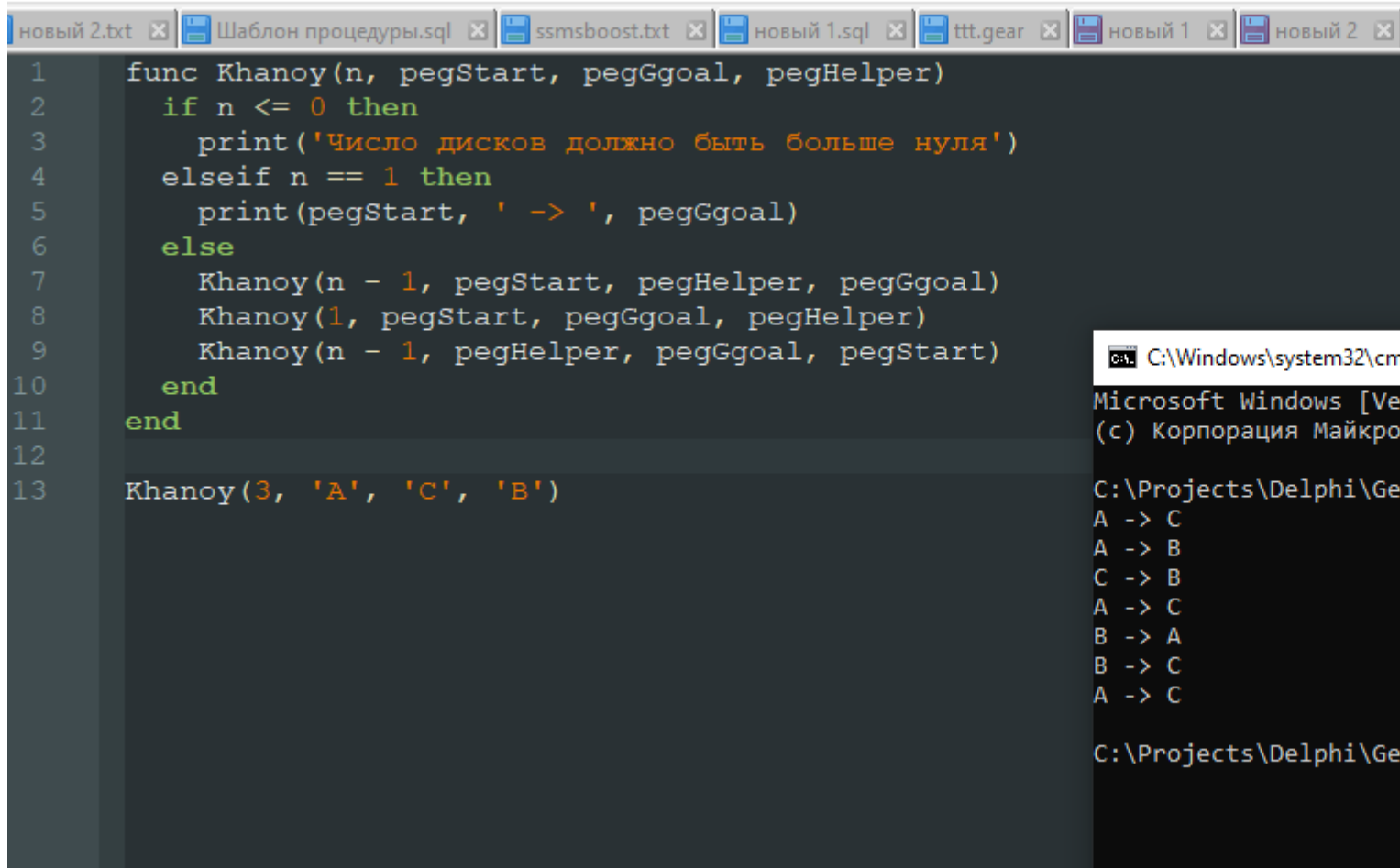
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The screenshot shows a Delphi IDE with several open files: 'новый 2.txt', 'Шаблон процедуры.sql', 'ssmsboost.txt', 'новый 1.sql', 'ttt.gear', 'новый 1', and 'новый 2'. The main editor displays a Pascal program named 'Khanoy' which is a recursive function for solving the Tower of Hanoi problem. The program uses a 'peg' pattern with parameters for the number of disks, start, goal, and helper towers. The output window on the right shows the sequence of moves for 3 disks from tower A to tower C using tower B as a helper.

```
1 func Khanoy(n, pegStart, pegGgoal, pegHelper)
2   if n <= 0 then
3     print('Число дисков должно быть больше нуля')
4   elseif n == 1 then
5     print(pegStart, ' -> ', pegGgoal)
6   else
7     Khanoy(n - 1, pegStart, pegHelper, pegGgoal)
8     Khanoy(1, pegStart, pegGgoal, pegHelper)
9     Khanoy(n - 1, pegHelper, pegGgoal, pegStart)
10  end
11 end
12
13 Khanoy(3, 'A', 'C', 'B')
```

Output:

```
C:\Windows\system32\cmd
Microsoft Windows [Version 6.0.6002.18005]
(c) Корпорация Майкрософт (Microsoft Corporation). Все права защищены.

C:\Projects\Delphi\Ge
A -> C
A -> B
C -> B
A -> C
B -> A
B -> C
A -> C

C:\Projects\Delphi\Ge
```

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Posted by on Sat, 04 Nov 2023 10:02:48 GMT
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Posted by [wildbill](#) on Sat, 04 Nov 2023 12:32:10 GMT
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Posted by [wildbill](#) on Sat, 04 Nov 2023 12:33:54 GMT

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Posted by [wildbill](#) on Sat, 04 Nov 2023 12:43:05 GMT

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Posted by [wildbill](#) on Sat, 04 Nov 2023 12:52:49 GMT

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Posted by [wildbill](#) on Sat, 04 Nov 2023 13:12:50 GMT

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Posted by [SD](#) on Sat, 04 Nov 2023 22:46:33 GMT

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Posted by
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on Sun, 05 Nov 2023 08:32:54

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Posted by [wildbill](#) on Sun, 05 Nov 2023 12:12:06 GMT
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Posted by [wildbill](#) on Sun, 05 Nov 2023 12:21:46 GMT

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Posted by [wildbill](#) on Sun, 05 Nov 2023 12:42:41 GMT

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Posted by
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on Mon, 06 Nov 2023 08:11:03

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Posted by [wildbill](#) on Mon, 06 Nov 2023 09:34:27 GMT

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Posted by [wildbill](#) on Mon, 06 Nov 2023 09:45:37 GMT

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Posted by [wildbill](#) on Mon, 06 Nov 2023 09:50:43 GMT

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Posted by [wildbill](#) on Mon, 06 Nov 2023 09:55:11 GMT

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Posted by [wildbill](#) on Mon, 06 Nov 2023 09:58:09 GMT

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Crafting interpreters.

using an external tree visitor pattern"

Posted by [wildbill](#) on Mon, 06 Nov 2023 12:32:31 GMT

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```
private boolean isDigit(char c) {  
    return c >= '0' && c <= '9';  
}
```

Underscore = ['_'];

```
LoCaseLetter  = ['a'..'z'];
UpCaseLetter  = ['A'..'Z'];
Letters       = UpCaseLetter + LoCaseLetter;
AlphaChars    = UpCaseLetter + LoCaseLetter + Underscore;
NumberChars   = ['0'..'9'];
```

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Posted by [SD](#) on Mon, 06 Nov 2023 12:42:33 GMT

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Posted by [wildbill](#) on Mon, 06 Nov 2023 12:48:12 GMT

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Crafting interpreters.

using an external tree visitor pattern"

Posted by [wildbill](#) on Mon, 06 Nov 2023 12:52:11 GMT

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```
private boolean isAlpha(char c) {
    return (c >= 'a' && c <= 'z') ||
```

```
(c >= 'A' && c <= 'Z') ||  
    c == '_';  
}  
  
private boolean isAlphaNumeric(char c) {  
    return isAlpha(c) || isDigit(c);  
}
```

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Posted by
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on Mon, 06 Nov 2023 14:44:17

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```
private boolean isDigit(char c) {  
    return c >= '0' && c <= '9';  
}
```

```
Underscore    = ['_'];  
LoCaseLetter  = ['a'..'z'];  
UpCaseLetter  = ['A'..'Z'];  
Letters       = UpCaseLetter + LoCaseLetter;  
AlphaChars    = UpCaseLetter + LoCaseLetter + Underscore;  
NumberChars   = ['0'..'9'];
```

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Posted by [wildbill](#) on Mon, 06 Nov 2023 14:51:05 GMT

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Posted by
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on Mon, 06 Nov 2023 16:30:28

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Posted by [wildbill](#) on Mon, 06 Nov 2023 16:44:59 GMT

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Posted by [wildbill](#) on Mon, 06 Nov 2023 16:46:33 GMT

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Posted by [wildbill](#) on Mon, 06 Nov 2023 16:49:42 GMT

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Posted by [wildbill](#) on Mon, 06 Nov 2023 17:03:17 GMT

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Posted by [wildbill](#) on Mon, 06 Nov 2023 17:06:08 GMT

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False

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Posted by [wildbill](#) on Mon, 06 Nov 2023 17:07:27 GMT

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True

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Posted by [wildbill](#) on Mon, 06 Nov 2023 17:12:07 GMT

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Posted by [wildbill](#) on Tue, 07 Nov 2023 06:00:15 GMT

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By the end of the book you'll be an Object Pascal guru and have some knowledge of Lazarus.

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Posted by on Tue, 07 Nov 2023 08:50:39 GMT

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Posted by [wildbill](#) on Tue, 07 Nov 2023 09:13:44 GMT

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Posted by [wildbill](#) on Tue, 07 Nov 2023 09:15:19 GMT

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<https://delphi-books.com/en/Writing-an-Interpreter-in-Object-Pascal-Part-1-The-Runtime-System.html>
