



KPL



(Kids Programming Language)

Learning is Best
When Learning is Fun



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Recent History



- Remember BASIC? How many of us started by coding **games**?!
- 20+ years since **LOGO**, the last widely available language designed for kids
- **2/3 decline** in US computer science enrollments in last 5 years !?!
- Modern programming IDEs have moved **far** beyond beginners - there's **way** too much to learn before programming becomes fun
- Thus KPL: **educational freeware** that is easy, fun, fast, productive and international - with dozens of examples to play, learn from and tinker with
- KPL is a **2006 Consumer Product of the Year** finalist (significantly, Washington Software Alliance has no Educational Product category)



- KPL has been downloaded over **55,000** times in the first 7 months - with **only** word-of-mouth marketing
- KPL will be presented as a paper at **SIGGRAPH 2006**

KPL's Technology

KPL is built on the .NET Framework, leveraging CodeDOM objects - we have lots of requests for other platforms

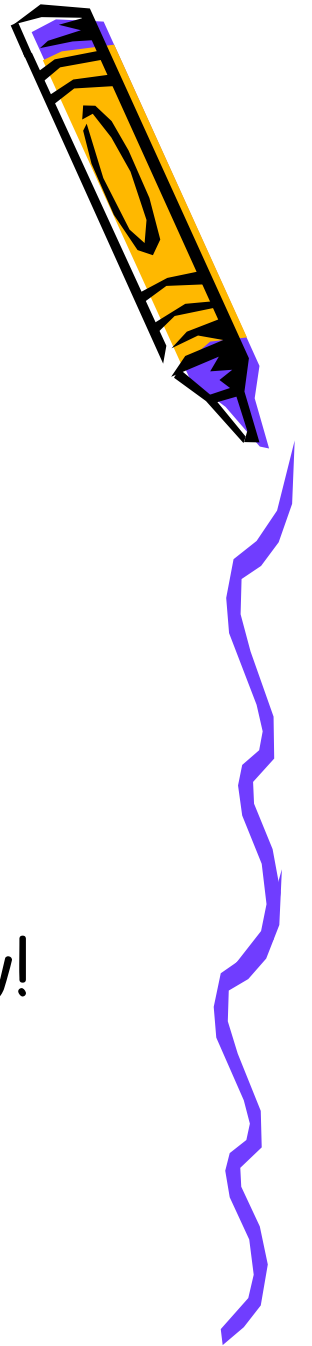
KPL v 2 wraps Managed DirectX for easy 3D programming
- OpenGL and IDX3D wrappers are obvious thoughts

KPL v 2 offers an open runtime architecture, allowing extension of the language with new functionality or alternative technologies



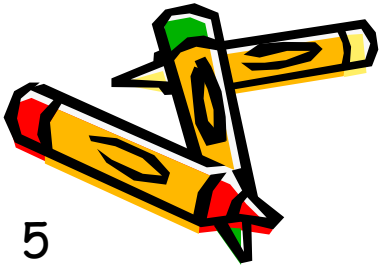
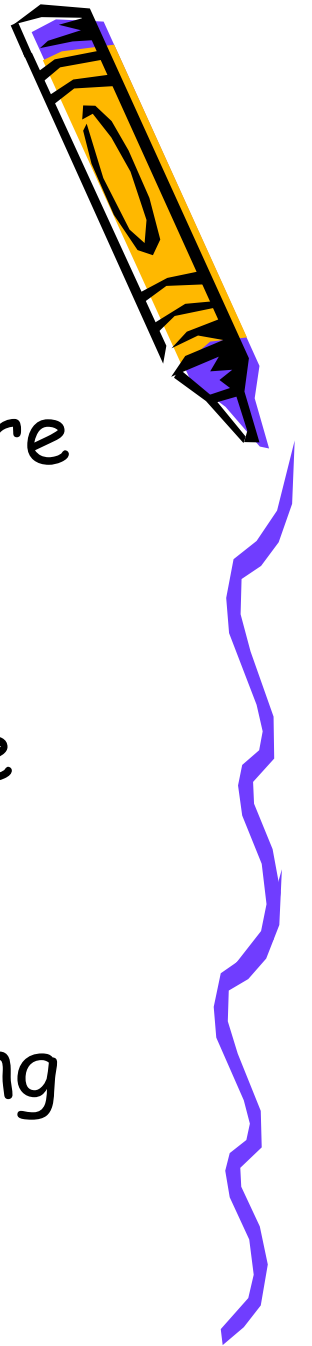
KPL's Language Design

- Readable and intuitive keywords
- Simple syntax
- Color-coded editor
- Strongly typed
- IntelliHelp and AutoComplete
- Procedural/modular programming
- Class-based programming in KPL v 2
- Easy to start, with lots of room to grow!



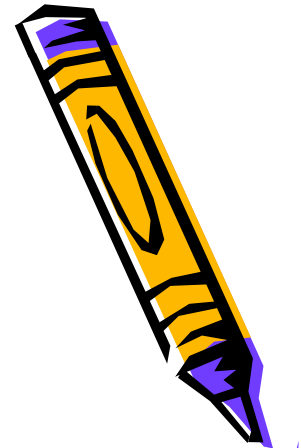
Immediate Gratification

- Fast fun results are best to capture and keep beginners' interest
- Graphics, animation and sounds are emphasized, and especially easy
- Feedback so far is **very** encouraging

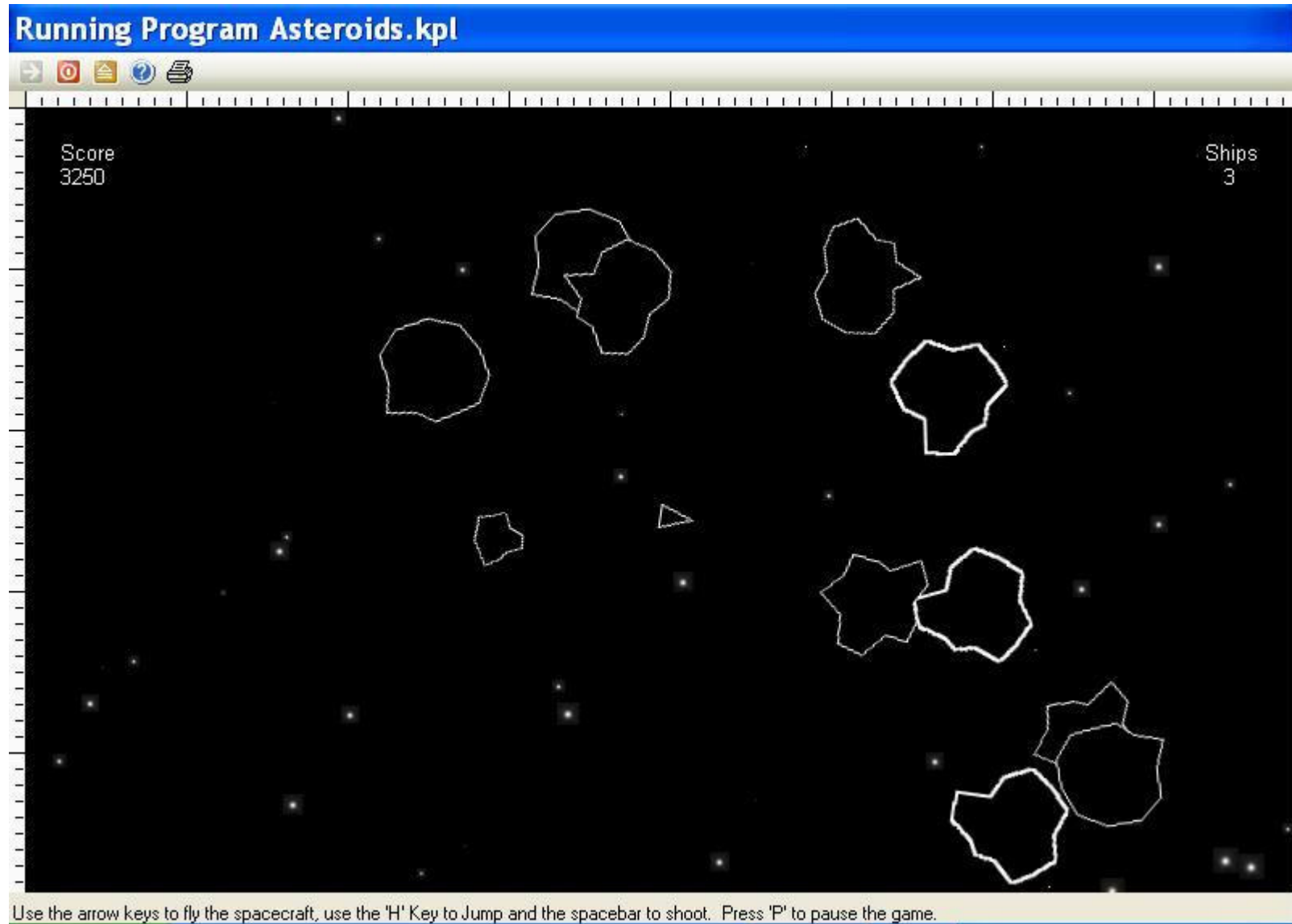


KPL-easy

```
1 Program UFO
2
3 Method Main()
4
5     LoadSprite( "UFO", "UFO.GIF" )
6     MoveSpriteToPoint( "UFO", 50, 0 )
7     ShowSprite( "UFO" )
8
9     Define ufoY As Int
10    For ufoY = 1 To 150
11        Delay(10)
12        MoveSpriteToPoint( "UFO", 50, ufoY )
13    Next
14
15 End Method
16
17 End Program
```



KPL-classic



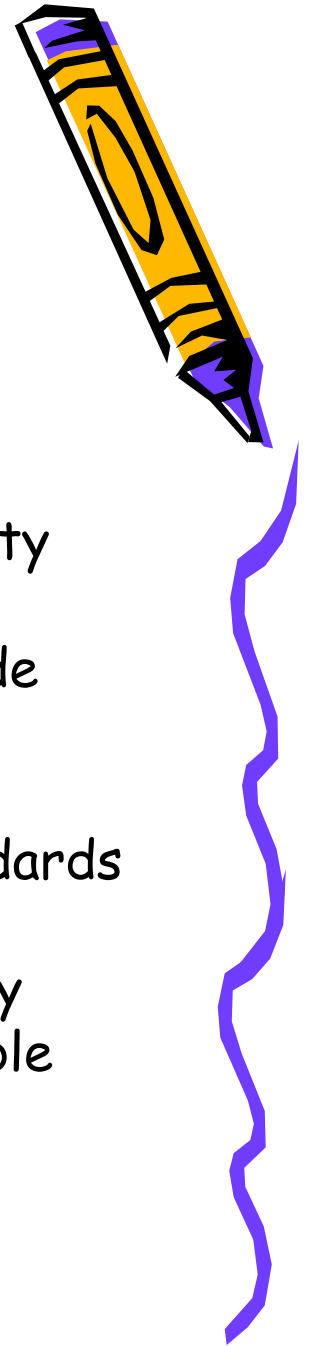
KPL-cool



Volunteer-contributed MissileCommand.kpl - a great game 20 years ago, and a great KPL example today!

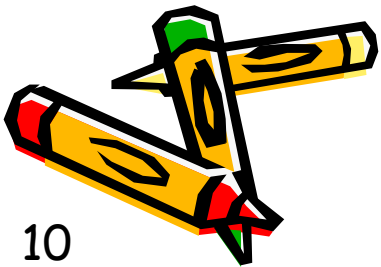
Pedagogical Goals

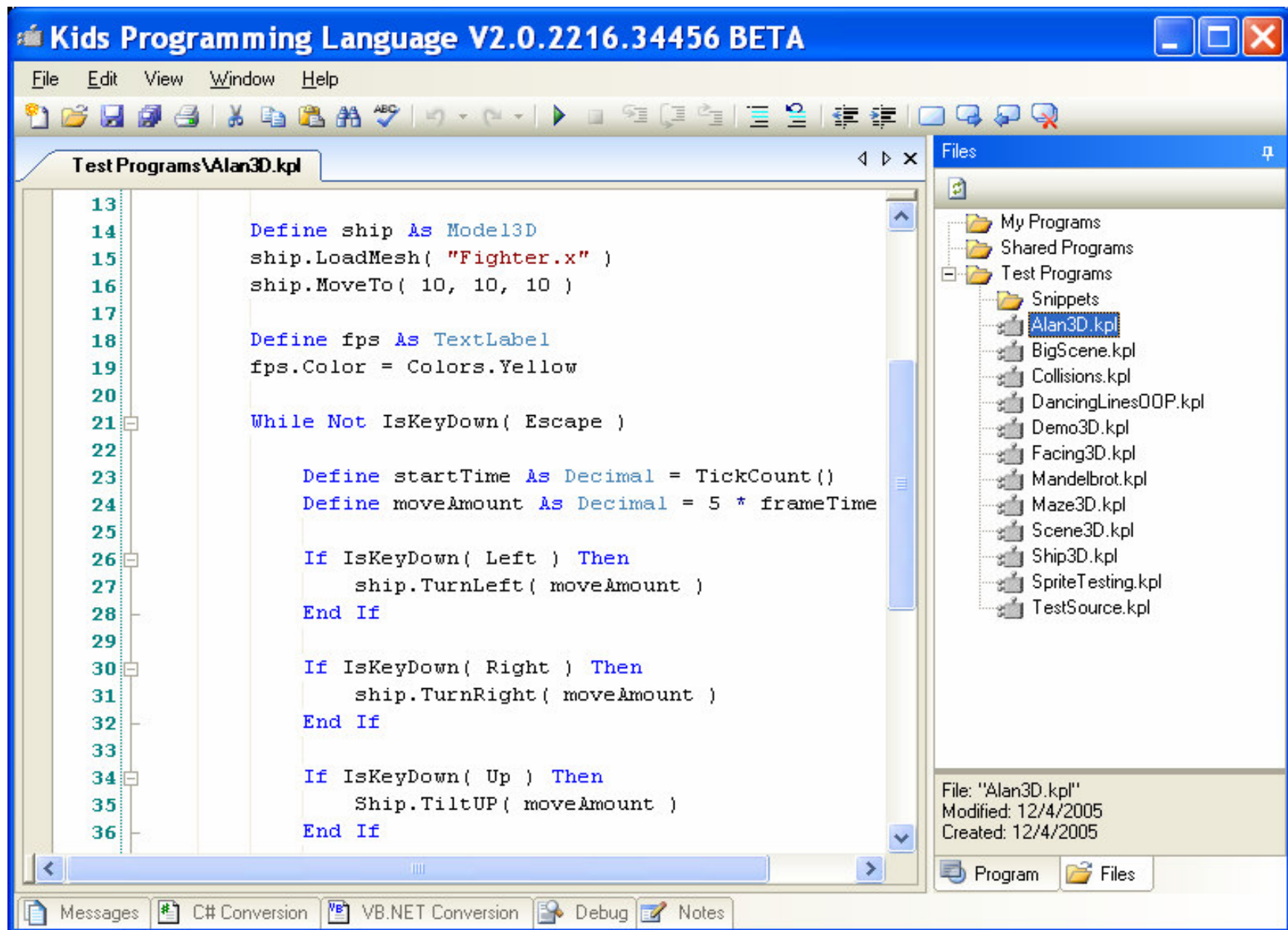
- **Fun:** learning is best when learning is fun
- **Accessible:** easy to get started
- **Engaging:** games, graphics, sounds
- **Simple:** resist CS tendency toward increasing complexity
- **Rewarding:** see quick, fun results from one's work
- **Highly leveraged:** maximum function from minimum code
- **Progressive:** lots of concepts to learn, step by step
- **Preparatory:** easy 'graduation' to C#, VB or Java
- **Modern:** consistent with current software design standards
- **Publishable:** in source form now, as executables soon
- **State of the art:** extensible use of current technology
- **International:** 16 IDE language versions already available

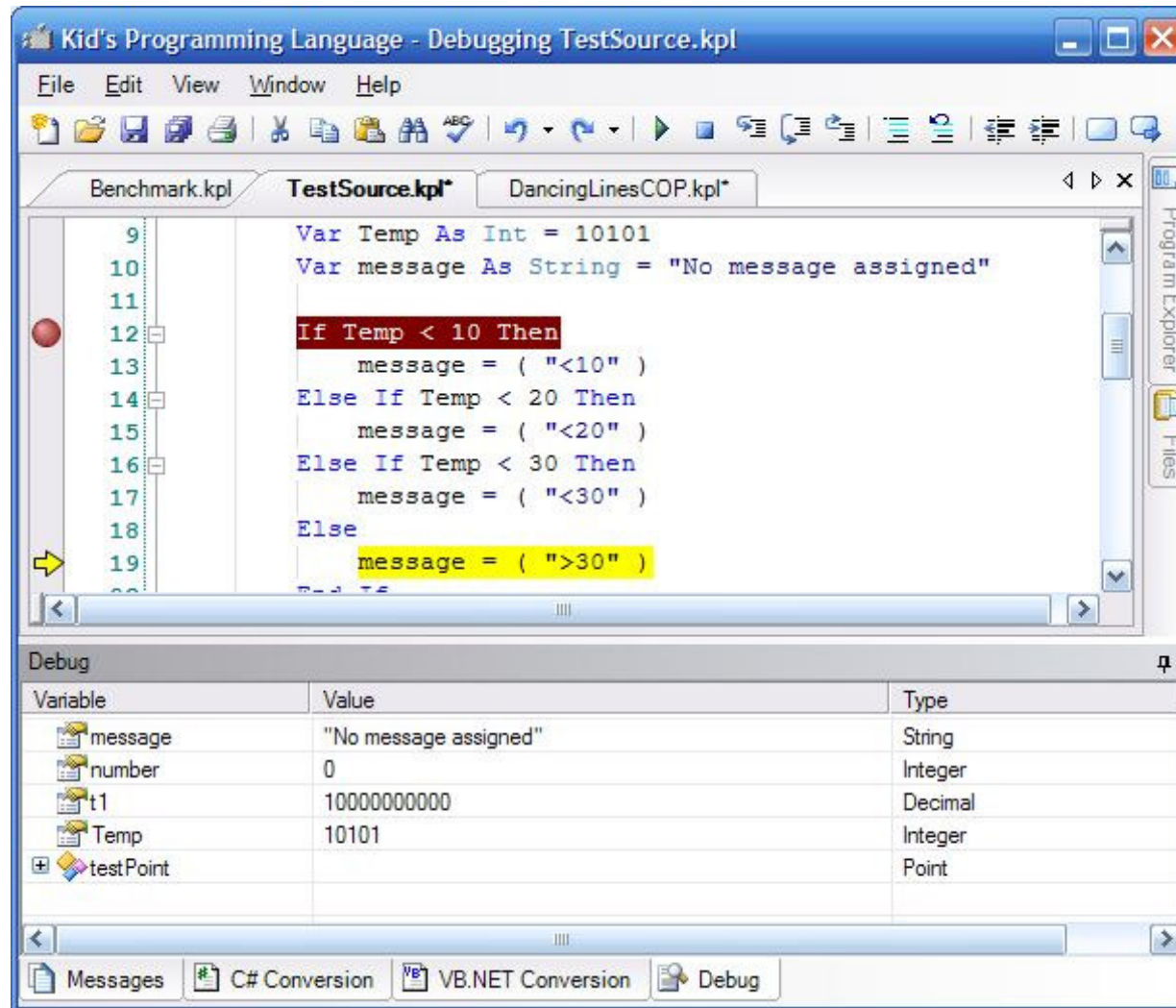


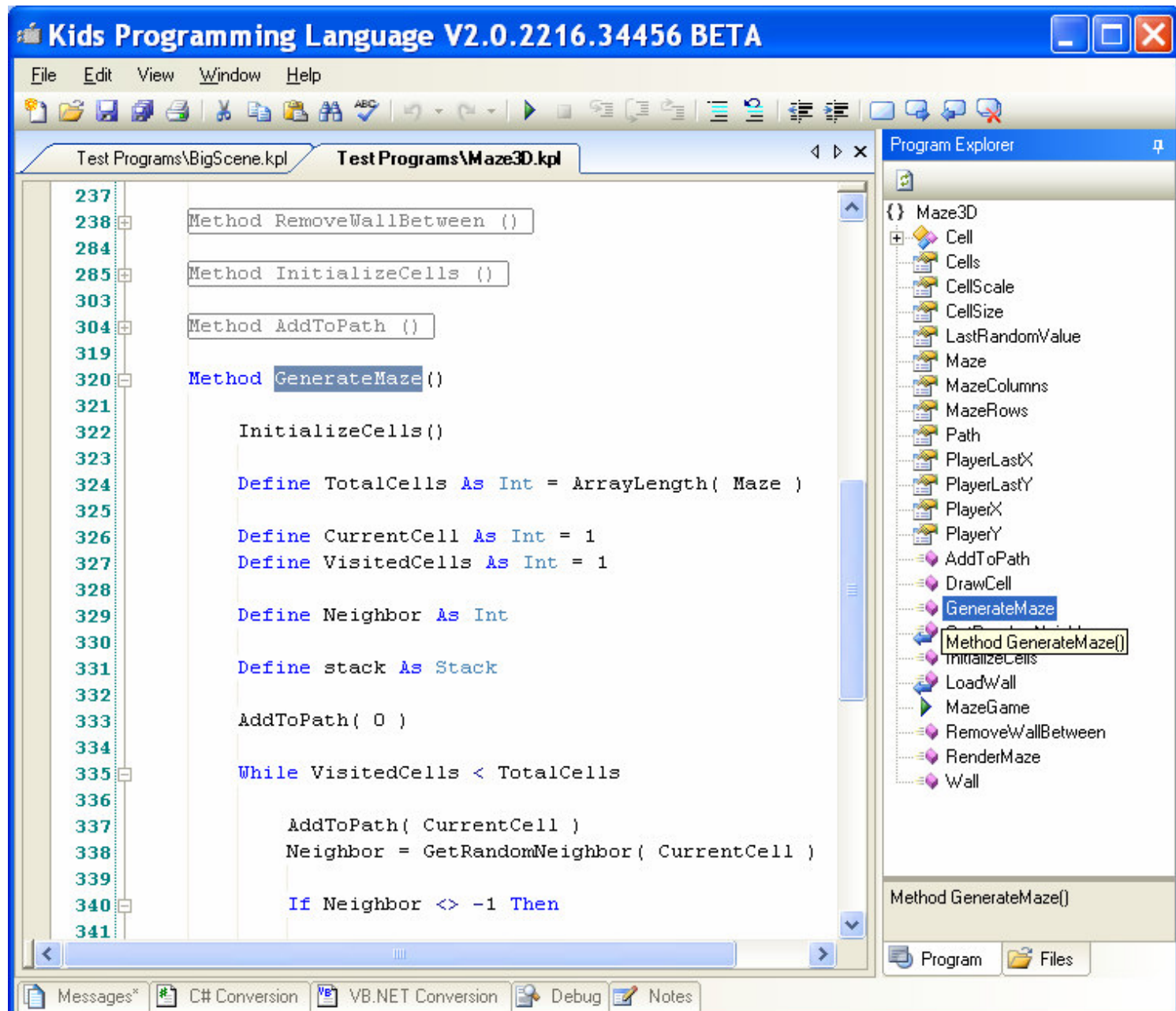
The KPL IDE

- Modern, and specifically designed to “graduate” beginners to VisualStudio.NET or Eclipse
- Powerful code editor with color coding, tooltips, intellisense, autocomplete and code snippets - all to assist learning **and** productivity
- File, Code, Image and Sound Explorers
- Debugging, stepping, and automatic watch window
- C# and VB.NET code conversions currently, with many requests for Java



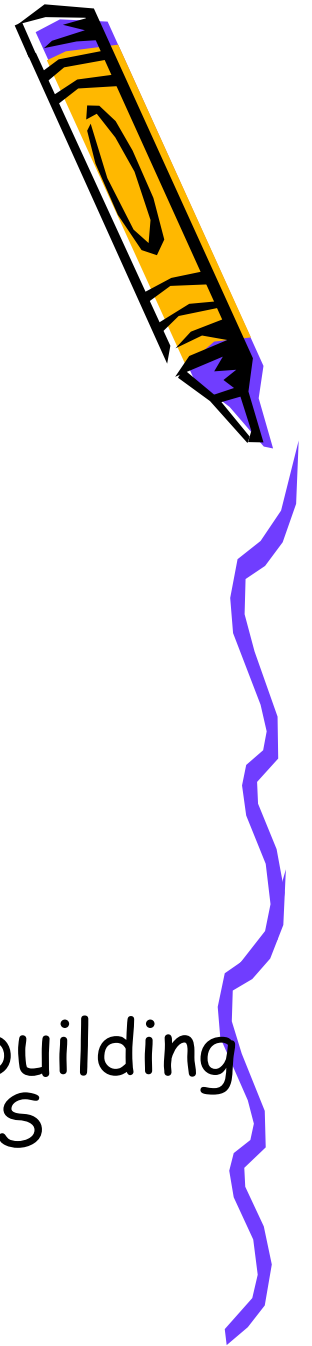


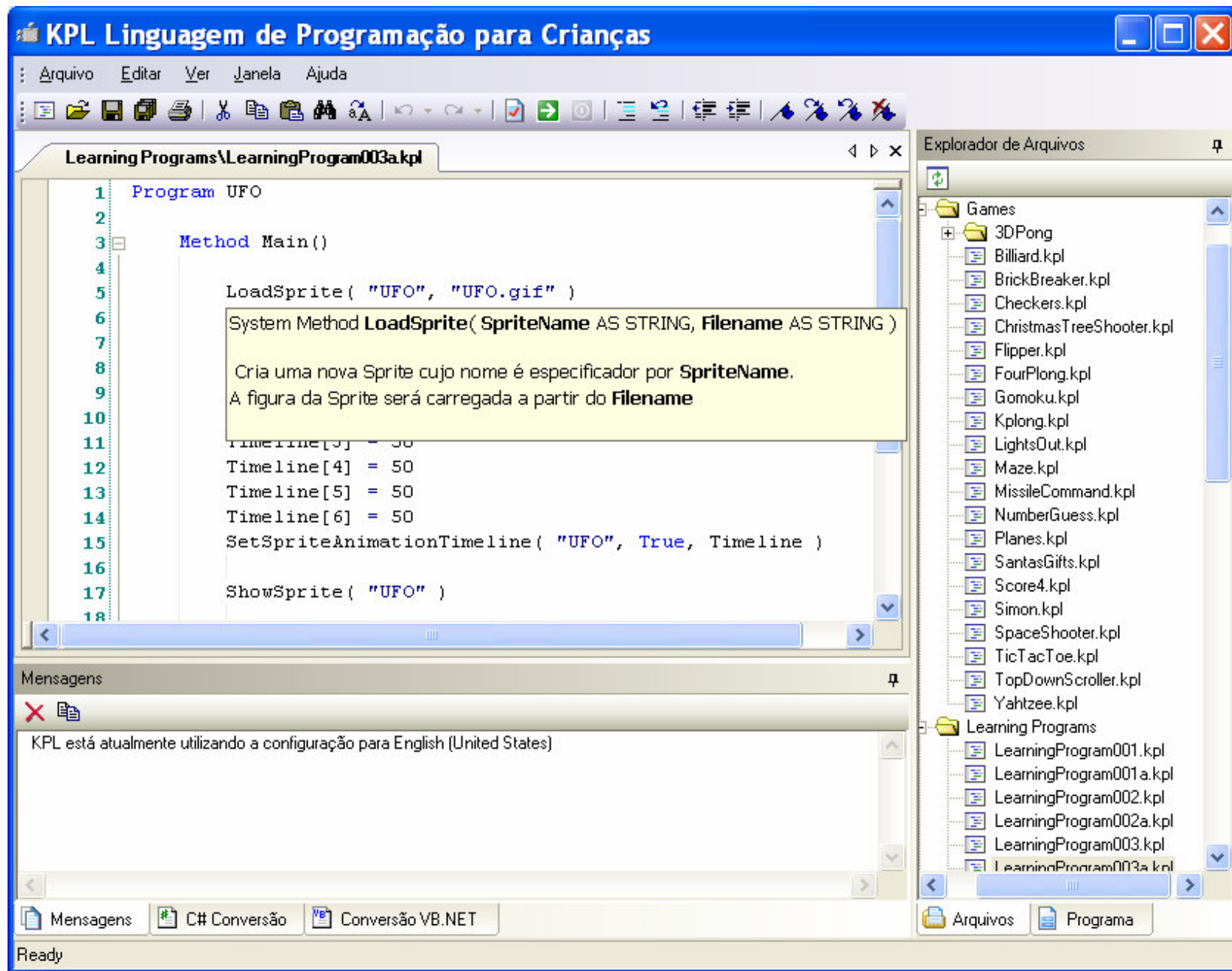


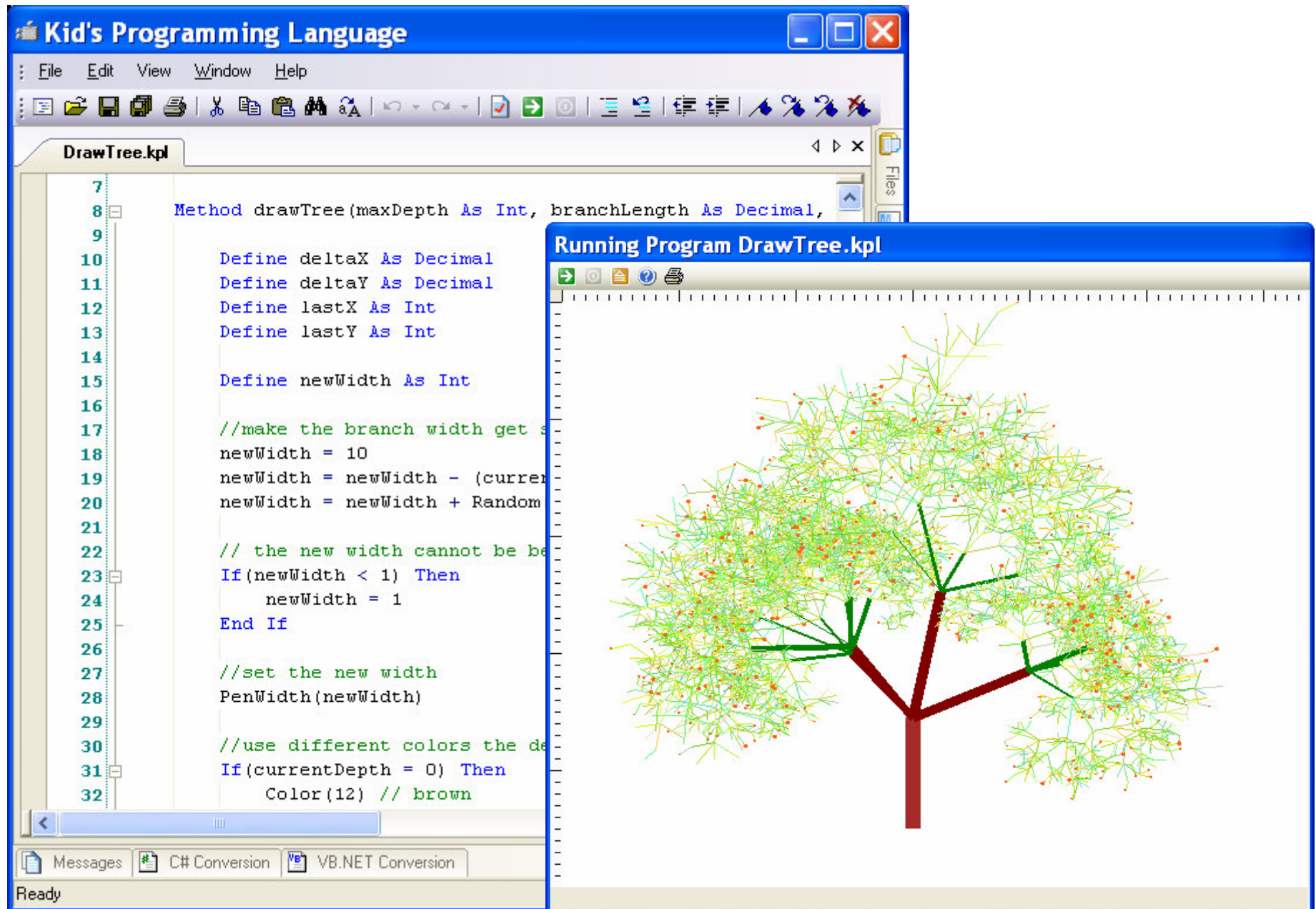


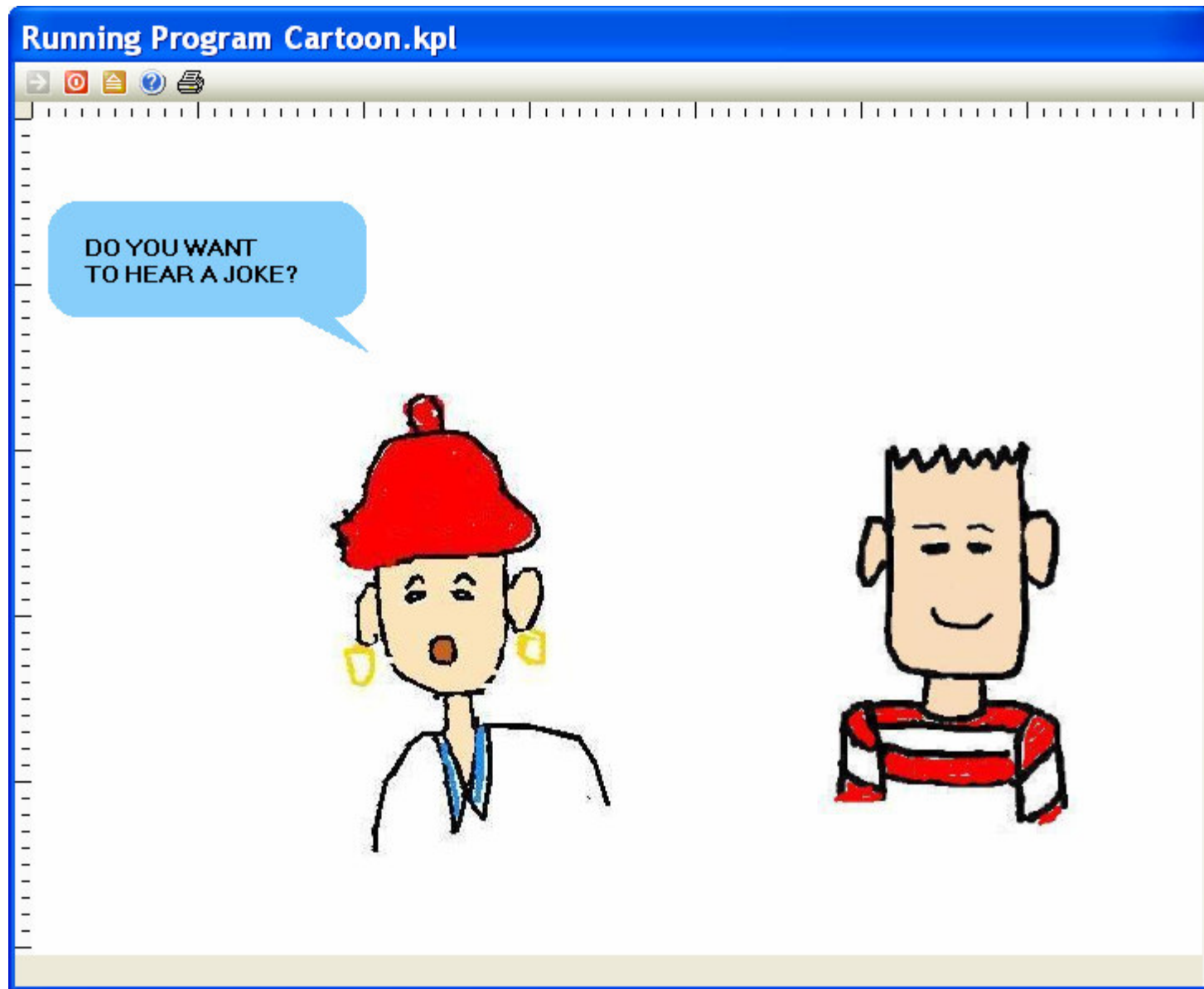
KPL Community: Global!

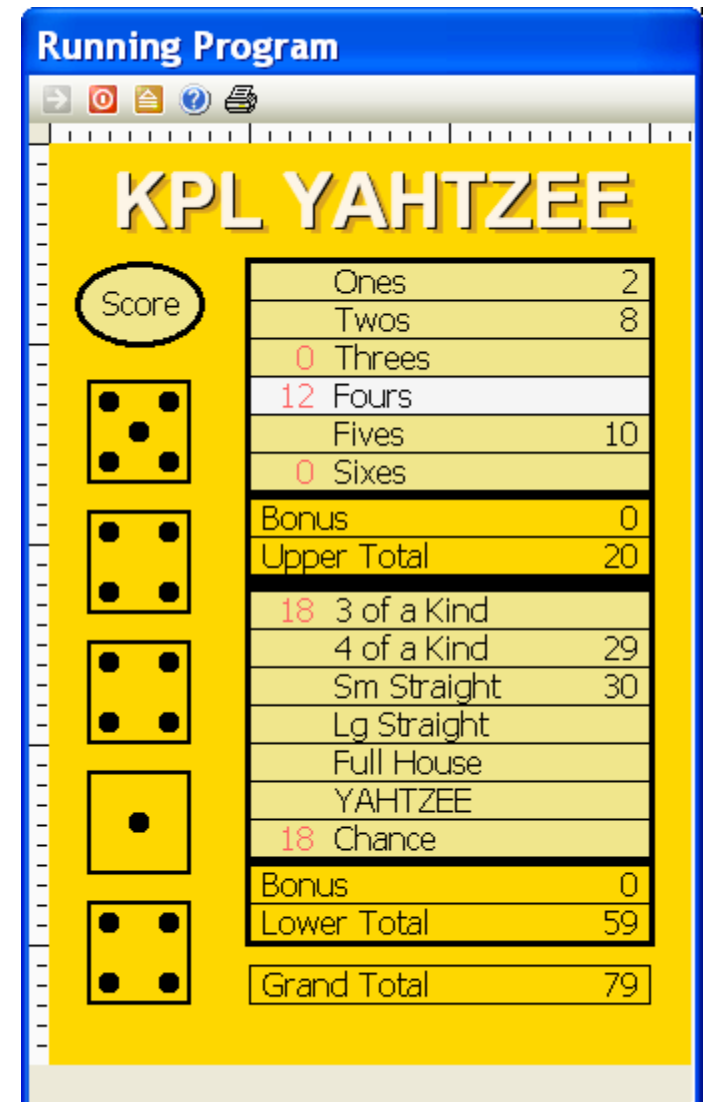
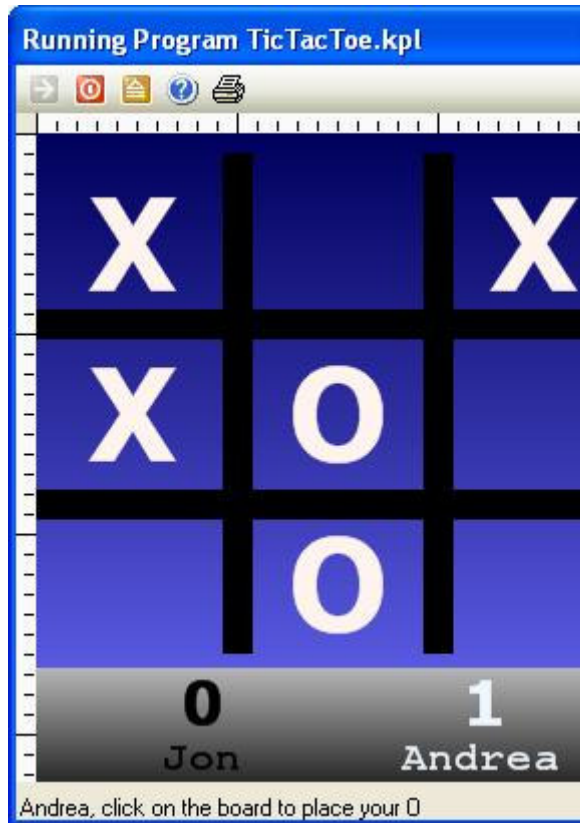
- IDE in 16 languages
- Web site in 3 languages
- Tutorial in 3 languages
- **Dozens** of KPL games and examples
- Books and curriculums in progress
- All of that in the **first 6 months**
- All of that **volunteer** contributions!
- This response inspires our own efforts building KPL, and shows its global potential for CS



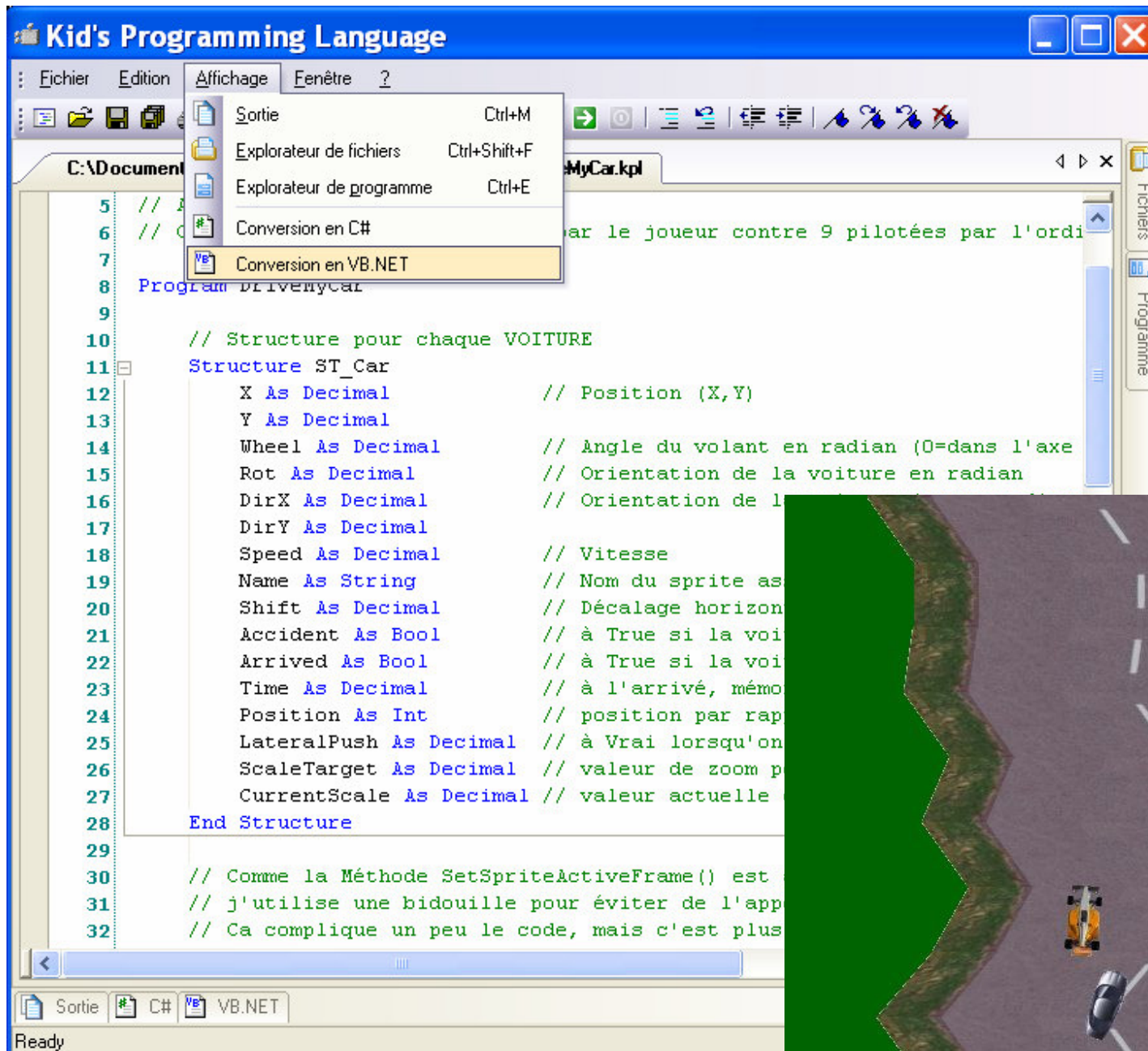






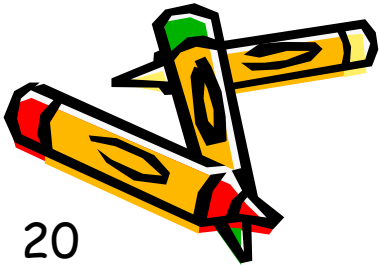
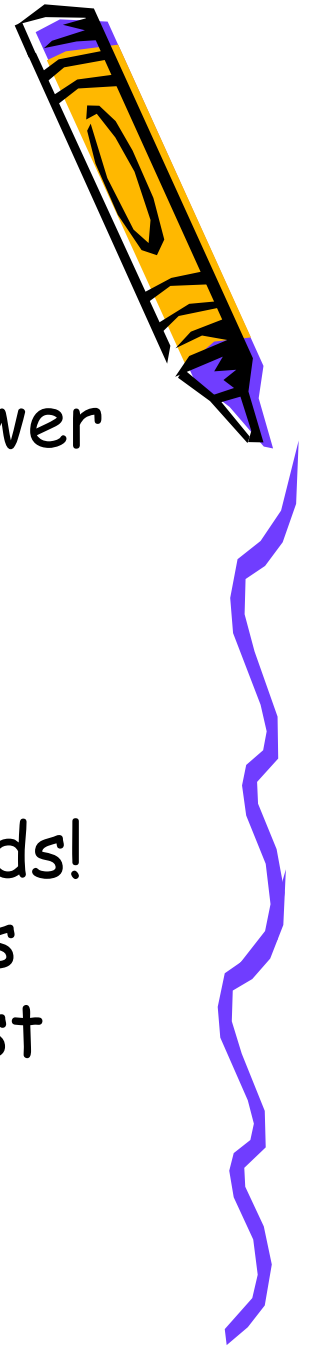


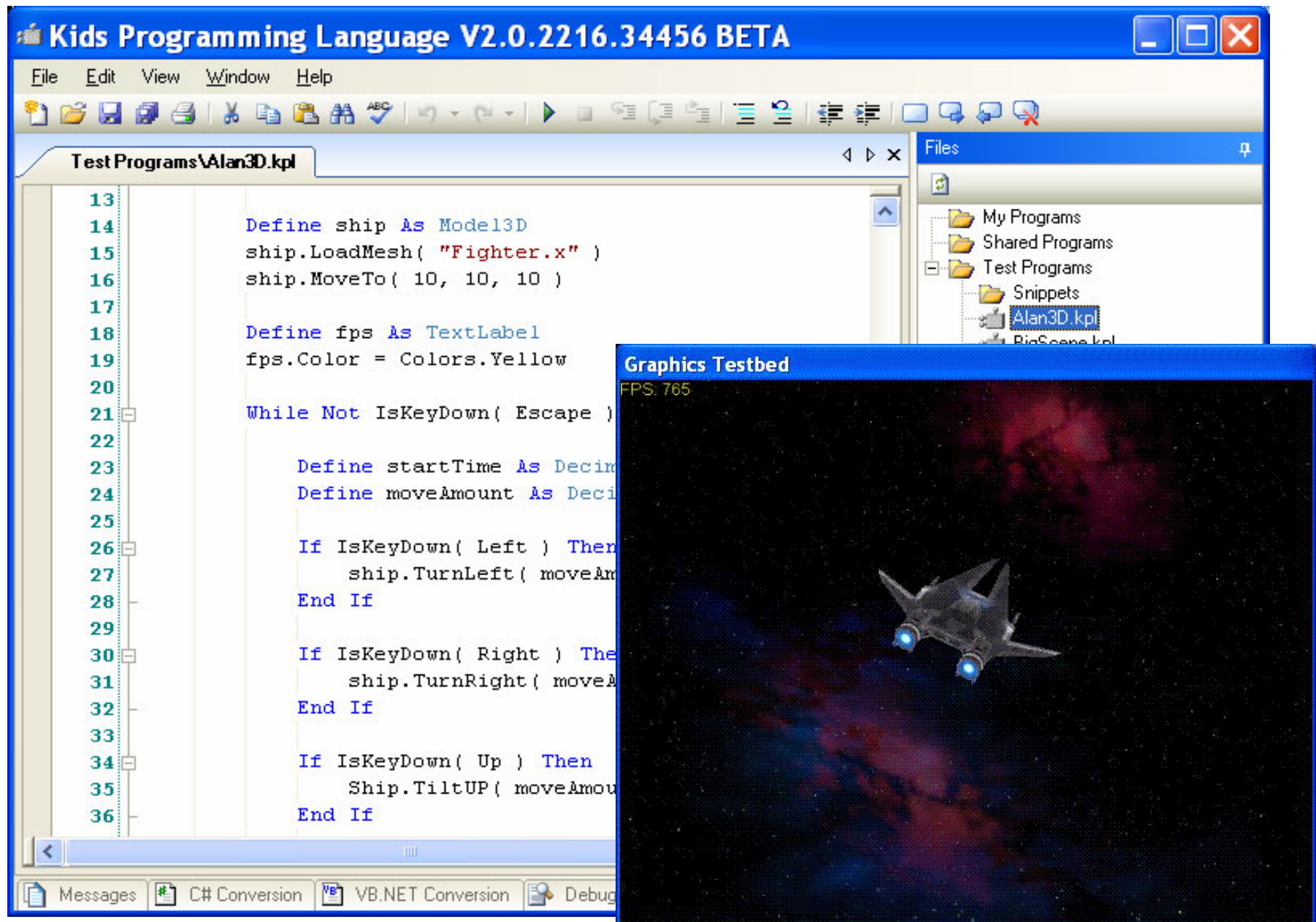
Just a few of the volunteer-contributed open source KPL games



KPL v 2: March 2006

- Simple experience preserved, great power added
- 1200% performance gain over KPL v 1
- Simple class-based programming
- KPL-simple 3D programming
- Remote control of robots! Use gamepads!
- Open architecture for runtime libraries
- Executables and an SDK will be the first features added after KPL v 2 release





Simple KPL v 2 code for display and control of a 3D spaceship model - with 45 KPL instructions! Note new class-based programming model.

Kid's Programming Language

File Edit View Window Help

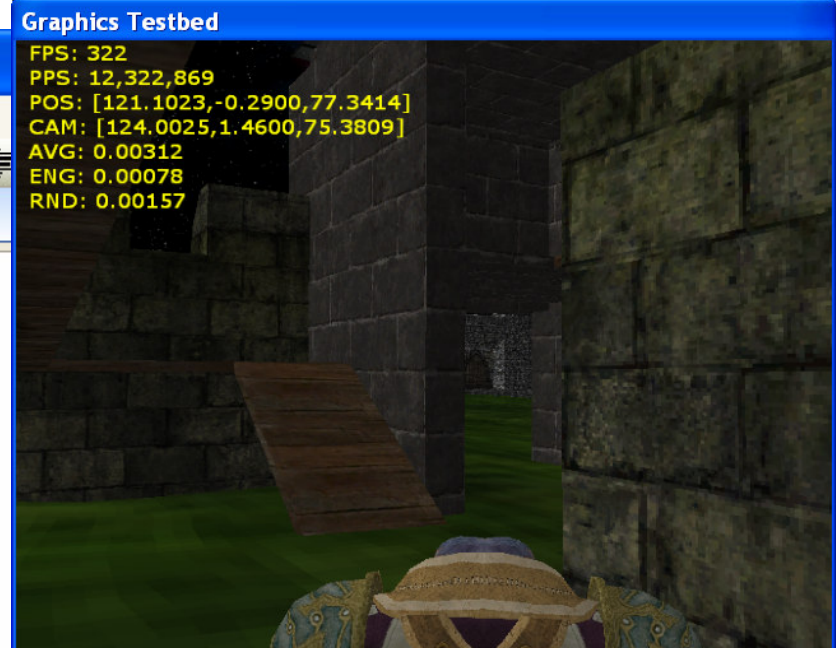
Test Programs\BigScene.kpl

```

105
106 If IsKeyDown( Right ) Then
107     Player.TurnRight( frameTime * 2 )
108 End If
109
110 If IsKeyDown( Up ) Then
111     If IsKeyDown( Shift ) Then
112         player.Forward( moveAmount * 2 )
113     Else
114         player.Forward( moveAmount )
115     End If
116 End If
117
118 If IsKeyDown( Down ) Then
119     player.Back( moveAmount )
120 End If
121
122 If IsKeyDown( Space ) And Not JumpMode Then
123     JumpMode = True
124     JumpStart = TickCount()
125 End If
126
127 If IsKeyDown("U") Or JumpMode Then
128     player.Up( moveAmount * 2 )
129     If TickCount() - jumpStart > 60 Then
130         JumpMode = False
131     End If
132 End If
133

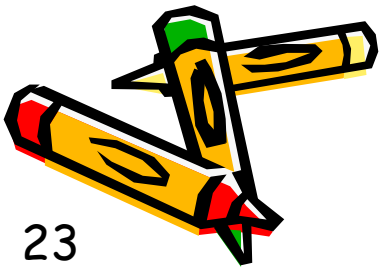
```

Messages* C# Conversion VB.NET Conversion Debug Notes

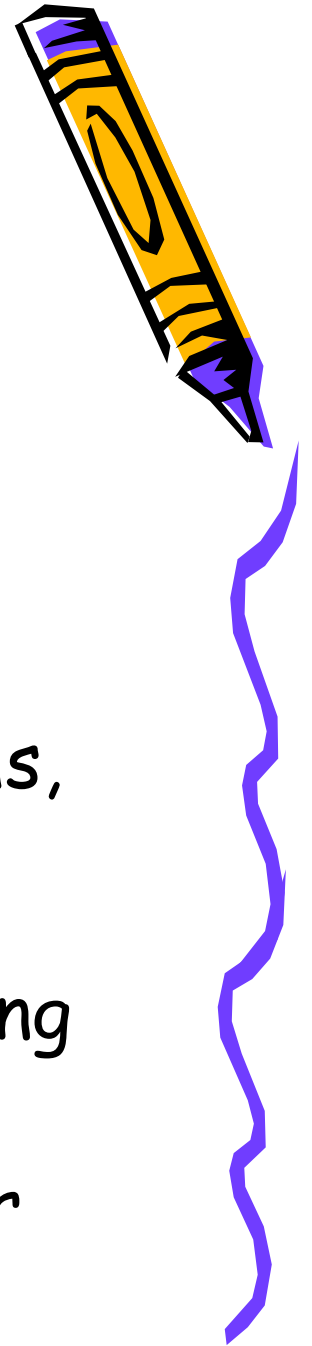


Not just for Kids!

- Most usage to date ages 10 to 16
- KPL intends to be the best choice for beginning programmers of **any** age
- Current plan is to simply call it **KPL**
- KPL has only been available for 6 months, but things are happening very quickly
- University usage so far is non-US only
- Prominent US CS programs are examining KPL for curriculum use

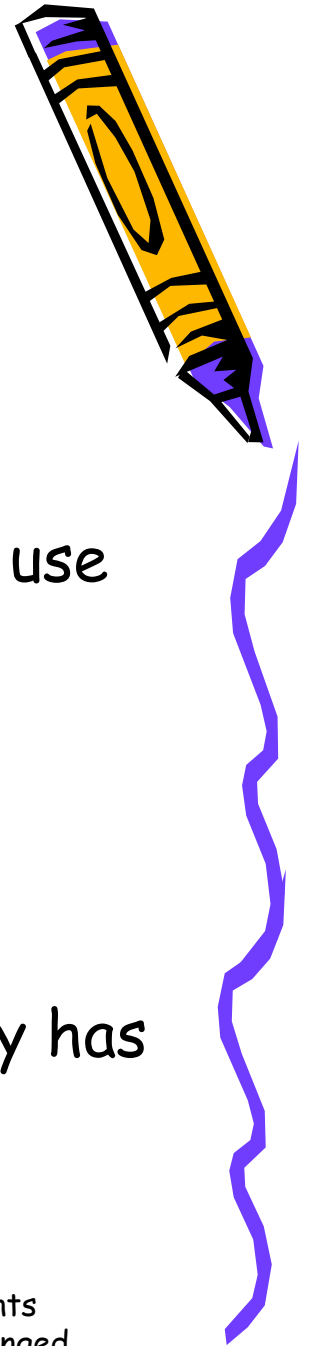
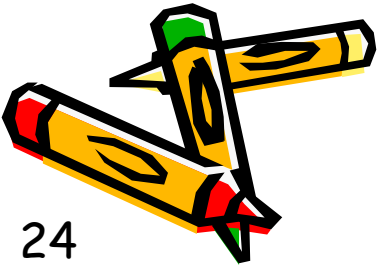


- KPL will be presented as a paper at **SIGGRAPH 2006** in August



You're Invited!

- Website: www.k-p-l.org
- We welcome personal, academic or research use of KPL - and remember, it's **freeware**
- We welcome volunteer participation in the community
- Can you help spread the word? KPL currently has \$0 sponsorship, and no advertising or PR



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