THE ART of programming

a talk by Erika Heidi
A Brief Story
MOM
BRAZILIAN ARTIST

DAD
GERMAN ENGINEER

CAT PERSON
DOG PERSON
<table>
<thead>
<tr>
<th>Ano/Período</th>
<th>Período</th>
<th>Componente Curricular</th>
<th>Carência Horária</th>
<th>Créditos</th>
<th>Nota</th>
<th>Frequência</th>
<th>Situação</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/1</td>
<td>1</td>
<td>INGLES TECNICO E INSTRUMENTAL</td>
<td>67</td>
<td>67</td>
<td>85</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2004/1</td>
<td>1</td>
<td>INTRODUÇÃO AO COMPUTADOR - DSI</td>
<td>67</td>
<td>67</td>
<td>79</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2004/1</td>
<td>1</td>
<td>LOGICA E ALGORITMOS</td>
<td>67</td>
<td>67</td>
<td>87</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2004/1</td>
<td>1</td>
<td>REDES DE COMPUTADORES - DSI</td>
<td>67</td>
<td>67</td>
<td>65</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2004/1</td>
<td>1</td>
<td>ALGEBRA LINEAR - DSI</td>
<td>67</td>
<td>67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005/1</td>
<td>2</td>
<td>CALCULO - DSI</td>
<td>33</td>
<td>33</td>
<td>98</td>
<td>87,88</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2005/1</td>
<td>2</td>
<td>FUNDAMENTOS DE GESTAO - DSI</td>
<td>33</td>
<td>33</td>
<td>98</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2005/1</td>
<td>2</td>
<td>PORTUGUES INSTRUMENTAL</td>
<td>67</td>
<td>67</td>
<td>73</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2005/1</td>
<td>2</td>
<td>PROGRAMACAO E ESTRUTURAS DE DADOS - DSI</td>
<td>100</td>
<td>100</td>
<td>81</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2005/1</td>
<td>2</td>
<td>PROTOCOLOS DE APLICACOES - DSI</td>
<td>67</td>
<td>67</td>
<td>98</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2005/1</td>
<td>2</td>
<td>SISTEMAS OPERACIONAIS - DSI</td>
<td>83</td>
<td>83</td>
<td>79</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2005/1</td>
<td>2</td>
<td>PROBABILIDADE E ESTATISTICA - DSI</td>
<td>67</td>
<td>67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005/2</td>
<td>3</td>
<td>BANCO DE DADOS RELACIONAL - DSI</td>
<td>100</td>
<td>100</td>
<td>72</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2005/2</td>
<td>3</td>
<td>DESIGN DE INTERFACE - DSI</td>
<td>67</td>
<td>67</td>
<td>80</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2005/2</td>
<td>3</td>
<td>FERRAMENTAS PARA A INTERNET - DSI</td>
<td>83</td>
<td>83</td>
<td>71</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2005/2</td>
<td>3</td>
<td>PROGRAMACAO ORIENTADA A OBJETOS - DSI</td>
<td>100</td>
<td>100</td>
<td>88</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2005/2</td>
<td>3</td>
<td>SISTEMAS DE INFORMACAO - DSI</td>
<td>33</td>
<td>33</td>
<td>80</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2005/2</td>
<td>3</td>
<td>RELACOES HUMANAS NO TRABALHO</td>
<td>33</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006/1</td>
<td>4</td>
<td>DESENVOLVIMENTO COM FERRAMENTA RAO - DSI</td>
<td>67</td>
<td>67</td>
<td>80</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2006/1</td>
<td>4</td>
<td>DESENVOLVIMENTO DE SITES DINAMICOS - DSI</td>
<td>67</td>
<td>67</td>
<td>90</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2006/1</td>
<td>4</td>
<td>LEGISLACAO TRABALHISTA E PREVIDENCIARIA - DSI</td>
<td>67</td>
<td>67</td>
<td>85</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2006/1</td>
<td>4</td>
<td>METODOLOGIA DA PESQUISA CIENTIFICA - DSI</td>
<td>50</td>
<td>50</td>
<td>95</td>
<td>85,71</td>
<td>Aprovado</td>
</tr>
<tr>
<td>2006/1</td>
<td>4</td>
<td>SEGURANCA DE DADOS - DSI</td>
<td>67</td>
<td>67</td>
<td>77</td>
<td>100,00</td>
<td>Aprovado</td>
</tr>
</tbody>
</table>
Programming

Is it Art or is it Science?
Back to the Early Days
"Software during the early days of this project was treated like a stepchild and not taken as seriously as other engineering disciplines, such as hardware engineering; and it was regarded as an art and as magic, not a science." Margaret Hamilton
What is Art?
"the expression or application of human creative skill and imagination, typically in a visual form such as painting or sculpture, producing works to be appreciated primarily for their beauty or emotional power." - Google
"the word art may refer to several things: (i) a study of a creative skill, (ii) a process of using the creative skill, (iii) a product of the creative skill, or (iv) the audience's experience with the creative skill." - Wikipedia
"The object of art is not to reproduce reality, but to create a reality of the same intensity." - Alberto Giacometti
“Art is the most intense mode of individualism that the world has known.” - Oscar Wilde
Keys to Art

- Expression
- Creativity
- Individualism
- Audience Experience
"the expression of human creative skill and imagination, generating an output that can be possibly experienced by someone other than you."
Art

- Not an adjective
- Doesn't need to be good
- Doesn't need to be beautiful
- Artist is not an adjective either
Now Back to Software
"I began to use the term 'software engineering' to distinguish it from hardware and other kinds of engineering. It was an ongoing joke for a long time. They liked to kid me about my radical ideas" Margaret Hamilton
Software Engineering

Let's face the truth

- Still very young compared to other engineering fields
- Strongly based on trial-and-error
- Tests can't be considered mathematical proof
Programming languages are building blocks
Going Vanilla
Using a Framework
The rest is up to you
Programming is art built on top of logic.
Technical Knowledge

Creativity
- lack of experience
- lack of technical knowledge

Experience
- lack of curiosity
- lack of creativity

Curiosity

Where the magic happens
The Creativity Myth
“It lives on because it appeals to romantic prejudices about invention. There is a myth about how something new comes to be.” - Kevin Ashton, The Creativity Myth
Creativity

You
“Don’t think about making art, just get it done. Let everyone else decide if it’s good or bad, whether they love it or hate it. While they are deciding, make even more art.” - Andy Warhol
THANKS!

@erikaheidi | erika@do.co
http://erikaheidi.com

joind.in/13582