

جامعة دمشق  
كلية الهندسة المدنية

مادة البرمجة  
السنة الثالثة

29/3/2023

Wael Darwich

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## Content

- Programming for Civil Engineers
  - Rational Thinking
- Programming Languages
  - MS Visual Basic
- Examples
- Syllabus
- Memory and Variables

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## To Program or Not to Program

- Programming for Civil Engineers
- Software Developers
- Simulation, Design and Analysis Tools
  - FEA
- Software End User
- Automation
- Logic and Rational Thinking

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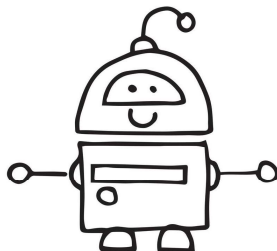
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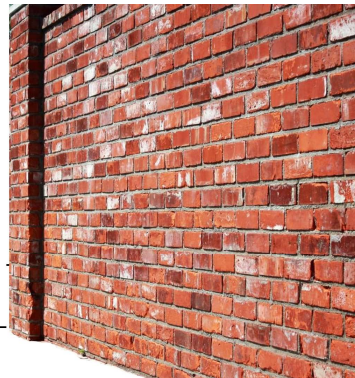
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## Rational Thinking

- Smart Computer/Software
- GIGO: Garbage In Garbage Out



X →



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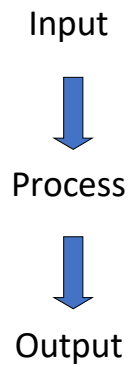
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## Rational Thinking

- Smart Computer/Software
- GIGO: Garbage In Garbage Out
- Algorithm
  - Set of Instructions
  - Inputs
  - Outputs
- Numerical issues
  - Point Inside Circle



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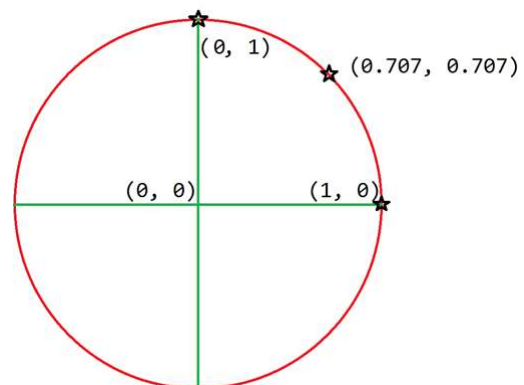
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## Rational Thinking

- Smart Computer/Software
- GIGO: Garbage In Garbage Out
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## Programming Languages

- Fortran                                      Formula Translation, 1957
- BASIC                                        Beginner's All-purpose Symbolic Instruction Code, 1964
- C/C++                                        1972/1985
- MS Visual Basic                          1991
- Python                                      1991
- Java                                         1995

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## Hello World

<pre>program HelloWorld   print *, "Hello World" end program HelloWorld</pre>	<pre>#include &lt;stdio.h&gt; #include &lt;stdlib.h&gt;  int main(void) {   printf("Hello World!\n");   return 0; }</pre>
<pre>10 PRINT "Hello World!"</pre>	<pre>#include &lt;iostream&gt; int main() {   std::cout &lt;&lt; "Hello World!" &lt;&lt; std::endl;   return 0; }</pre>

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# Hello World

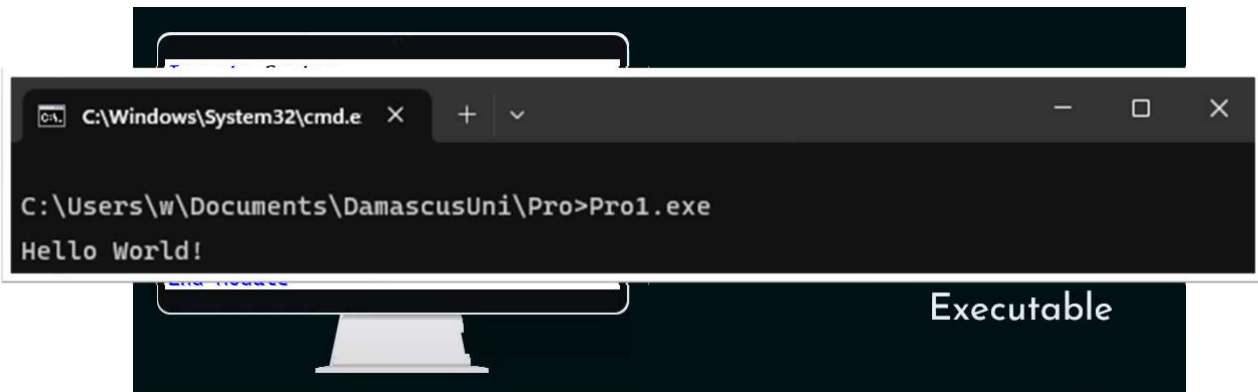
```
print("Hello World!")
```

```
class HelloWorld {  
    public static void main(String[] args) {  
        System.out.println("Hello World!");  
    }  
}
```

# Visual Basic

```
Imports System  
Module Program  
    Sub Main(args As String())  
        ' Hello World!  
        Console.WriteLine("Hello World!")  
    End Sub  
End Module
```

## Visual Basic



## Programming Languages

- Source Code
- Keywords
- Syntax
- Compiler vs. Interpreter
- IDE Integrated Development Environment
  - Text Editor
  - Compiler
  - Debugger

```

1 Imports System
2
3 Module Program
4     0 references
5     Sub Main(args As String())
6         ' Hello World!
7         Console.WriteLine("Hello World!")
8     End Sub
9 End Module

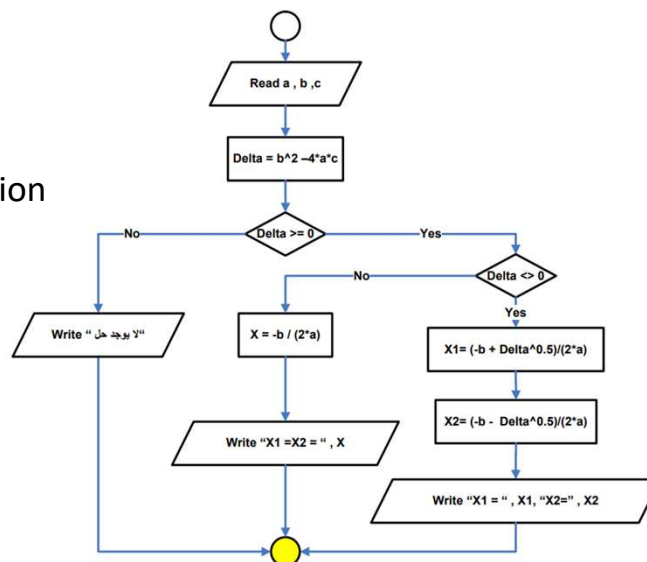
```

Output: Hello World!

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## Examples

- Second Order Equation
- Version 2.0
  - Imaginary Solution
- Crash!
  - First Order



معلوماتية سنة أولى - د عبد السلام زيدان

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## Examples

- حساب كلفة فاتورة الكهرباء

### التعرفة:

من ١ إلى ٦٠٠ بسعر ٢ ل.س، من ٦٠١ إلى ١٠٠٠ بسعر ٦ ل.س، من ١٠٠١ إلى ١٥٠٠ بسعر ٢٠ ل.س، من ١٥٠١ إلى ٢٥٠٠ بسعر ٩٠ ل.س، من ٢٥٠١ فما فوق بسعر ١٥٠ ل.س لكل ك.وس

### عزيزي المشترك:

عزيزي المشترك يرجى عدم احضار اي مبلغ فوق المليون ليرة سورية وتسديد قيمة الفاتورة عن طريق (نافذة الدفع الالكتروني--او عن طرق شيك من اي مصرف مصدق اصولا او عن طريق المصرف التجاري في حساب الشركة العامة لكهرباء محافظة دمشق رقم الحساب/ ١٠٥١٠١٤٣٩٠٠١ / ومراجعتنا بعد التسديد للحصول على الفاتورة مباشرة نرجو المبادرة الى تسديد الفواتير المترتبة عليكم تجنباً من سحب العداد في حال التأخر لمدة اربعة اشهر تطبيقاً لنظام الاستثمار الجديد .

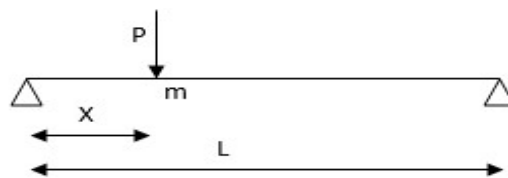
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## Examples

- Calculate reactions and bending moment



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# Syllabus

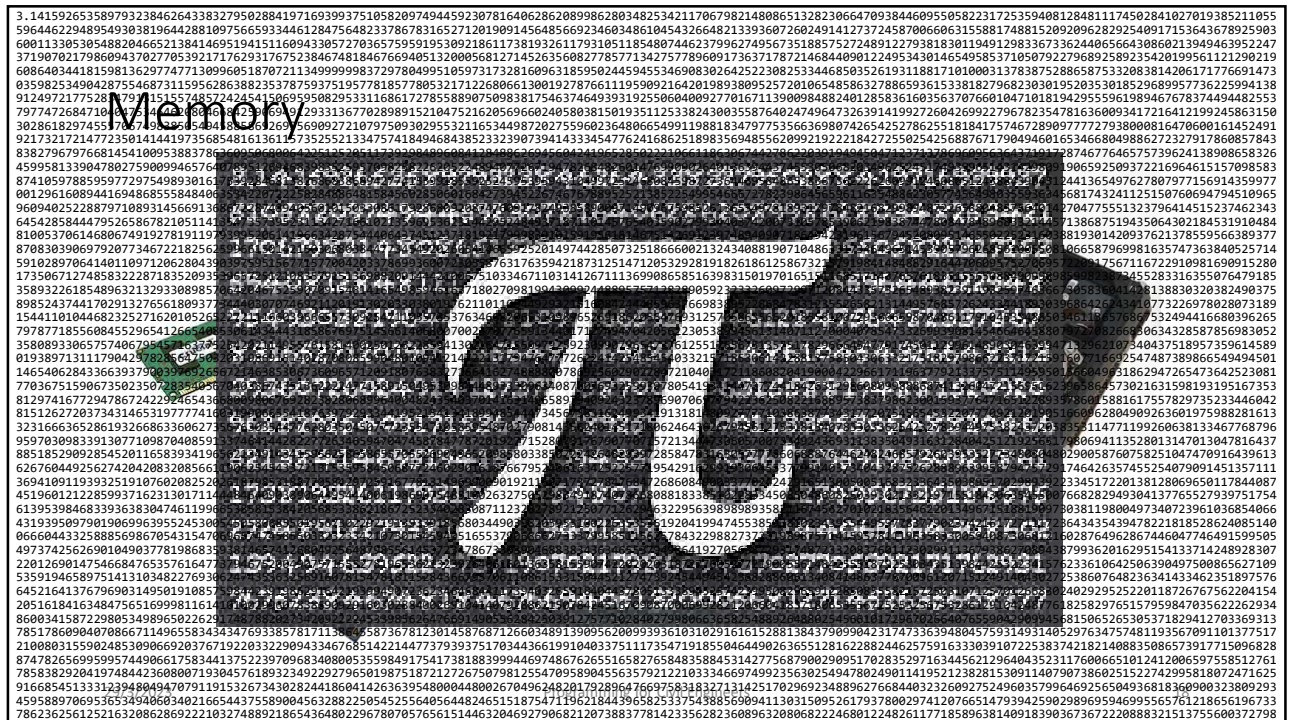
- Introduction
- Functions
- Input/Output
- Conditions
- Loops
- Arrays
  - 2D
- Examples

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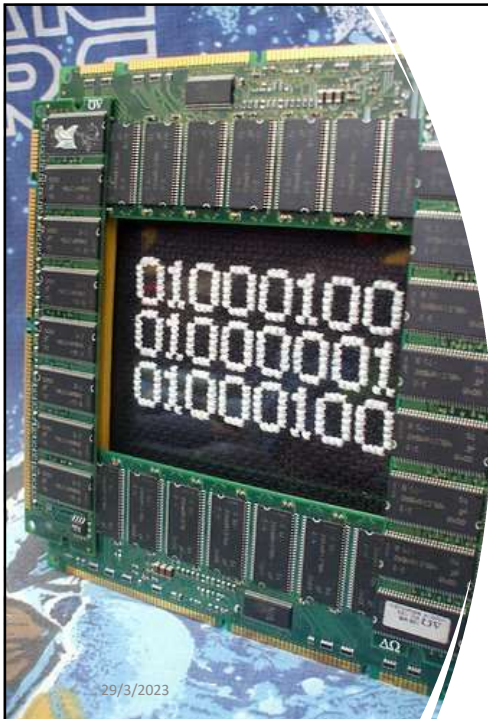
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## Bit vs Byte

- Bit or binary digit 0/1
- 2 Bit 0/1 0/1
- 3 Bit 0/1 0/1 0/1

$2^3$  values = 8

0:	0	0	0
1:	0	0	1
2:	0	1	0
3:	0	1	1
4:	1	0	0
5:	1	0	1
6:	1	1	0
7:	1	1	1

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## Memory

- Input 'Hello' to memory
- Hello = H + e + l + l + o

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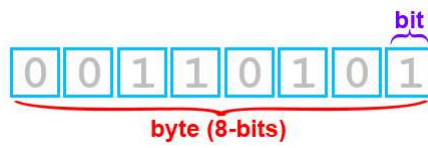
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# ASCII

- The **American Standard Code for Information Interchange**
- $2^8 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 256$



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DEC Symbol	DEC Symbol	DEC Symbol	DEC Symbol	DEC Symbol	DEC Symbol	DEC Symbol	DEC Symbol
0 NUL	32	64 @	96	128 €	160	192 A	224 à
1 SOH	33 !	65 A	97 a	129	161 i	193 Á	225 á
2 STX	34 "	66 B	98 b	130	162 j	194 Â	226 â
3 ETX	35 #	67 C	99 c	131	163 k	195 Ã	227 ã
4 EOT	36 \$	68 D	100 d	132	164 l	196 Ä	228 ä
5 ENQ	37 %	69 E	101 e	133	165 m	197 Å	229 å
6 ACK	38 &	70 F	102 f	134	166 n	198 Æ	230 æ
7 BEL	39 '	71 G	103 g	135	167 o	199 Ç	231 ç
8 BS	40 (	72 H	104 h	136	168 p	200 È	232 è
9 HT	41 )	73 I	105 i	137	169 q	201 É	233 é
10 LF	42 *	74 J	106 j	138	170 r	202 Ê	234 ê
11 VT	43 +	75 K	107 k	139	171 s	203 Ë	235 ë
12 FF	44 ,	76 L	108 l	140	172 t	204 Ì	236 ì
13 CR	45 -	77 M	109 m	141	173 u	205 Í	237 í
14 SO	46 .	78 N	110 n	142	174 v	206 Î	238 î
15 SI	47 /	79 O	111 o	143	175 w	207 Ï	239 ï
16 DLE	48 0	80 P	112 p	144	176 x	208 ð	240 ò
17 DC1	49 1	81 Q	113 q	145	177 y	209 Ñ	241 ñ
18 DC2	50 2	82 R	114 r	146	178 z	210 Ò	242 ò
19 DC3	51 3	83 S	115 s	147	179 {	211 Ó	243 ó
20 DC4	52 4	84 T	116 t	148	180	212 Ô	244 ô
21 NAK	53 5	85 U	117 u	149	181 }	213 Õ	245 õ
22 SYN	54 6	86 V	118 v	150	182 ~	214 Ö	246 ö
23 ETB	55 7	87 W	119 w	151	183	215 ×	247 ×
24 CAN	56 8	88 X	120 x	152	184	216 Ø	248 ø
25 EM	57 9	89 Y	121 y	153	185	217 Ù	249 ù
26 SUB	58 :	90 Z	122 z	154	186	218 Ú	250 ú
27 ESC	59 ;	91 [	123 {	155	187	219 Û	251 û
28 FS	60 <	92 \	124	156	188 ¼	220 Ü	252 ü
29 GS	61 =	93 ]	125 }	157	189 ½	221 Ý	253 ý
30 RS	62 >	94 ^	126 ~	158	190 ¾	222 Þ	254 þ
31 US	63 ?	95 _	127	159	191 ⅘	223 ß	255 ÿ

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## Memory

- Input 'Hello' to memory
- Hello = H + e + l + l + o
- 01001000 01100101 01101100 01101100 01101111

## Study Material

- Download material from:
  - <http://damascusuniversity.edu.sy/civil/index.php>
  - <https://pro.el.sy/>
- Contact:  
[w@el.sy](mailto:w@el.sy)

