

TI-Codes

Applications of coding using the NSpire CX, 84-CE,
and Innovator Hub

Presenters

Marc Garneau
T³ National Instructor
British Columbia, Canada



Marc Garneau is a Helping Teacher for the Surrey School District in British Columbia, supporting teachers for Mathematics and Numeracy K-12. A T^3 National Instructor, Marc has been involved for many years as a tech author for many of the Math Nspired activities, in which capacity he has developed many tips and tricks for creating interactive documents. In addition to promoting the effective use of technology in mathematics, Marc focuses many of his workshops on teaching through problem solving, formative assessment, and the power of visualization for developing concepts. He is currently the Canadian Regional Director on the NCSM Board.

Todd Graba
T³ Regional Instructor
Crystal Lake, IL



Todd Graba is the STEM Division Leader at Crystal Lake South High School in Crystal Lake, IL. His teaching background is in physics and chemistry, but has extensive curriculum experiences in all high school math and science practices. Todd's main professional development areas for TI are in using the NSpire and Navigator systems in science classes, and with incorporating coding into the classroom or STEM activities with the Innovator Hub.

TI-Codes, but why?

Seven million job openings in 2015 were in occupations that required coding skills, and programming jobs overall are growing 12% faster than the market average. - Burning Glass Job Analytics Firm

This finding is the result of researchers broadening the scope of their analysis to include coding skills across five major job categories:

- Information Technology worker
- Data Analysts
- Artists and designers
- Engineers
- Scientists

TI-Basic for two main platforms



<https://education.ti.com/en/activities/ti-codes>

TI-Codes, but why?

Half of all programming openings are in industries outside of technology. Among them:

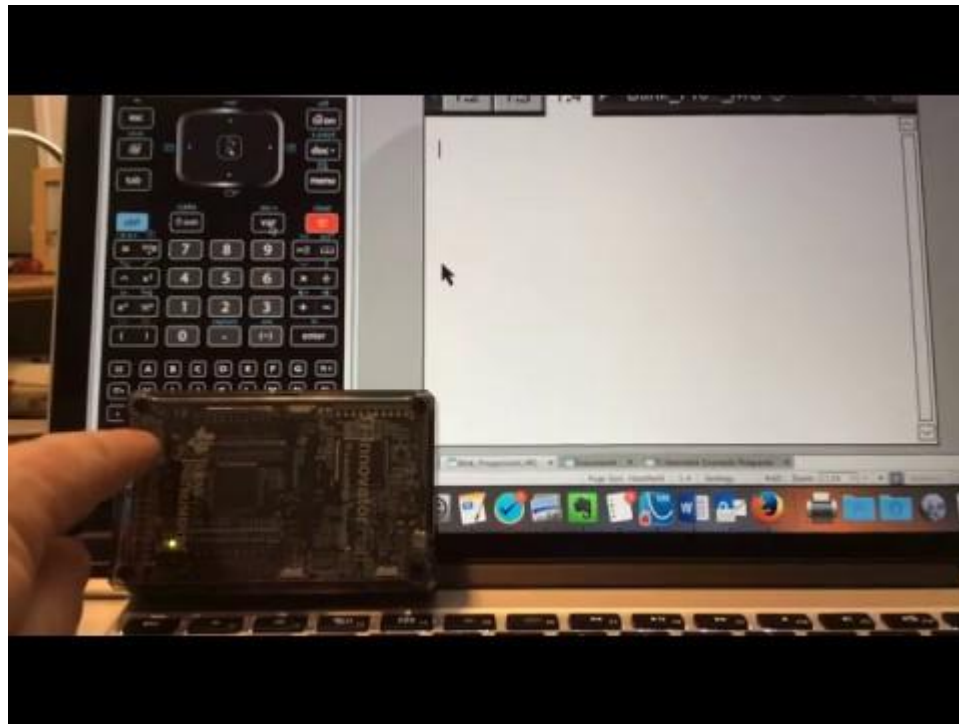
- Finance
- Manufacturing
- Health Care

Burning Glass researchers found that jobs that require coding skills pay up to \$22,000 per year more, on average. “For students looking to increase their potential income, few other skills open the door to as many well-paying careers,” they write in the report. Nearly half (49%) of all jobs that pay more than \$58,000 require some coding skills, according to their analysis.

The report found that the highest demand was for programming languages with broad applicability. Other skills in demand include:

- SQL – Databases
- Java -General purpose programming
- Javascript -Web development
- Linux – Computer system operations
- XML – General purpose programming
- C++ -General purpose programming, especially in engineering
- C# -General purpose programming
- Python -General purpose programming
- .NET -General purpose programming

Blink Running



Progression of that simple program

Define blink()=

Prgm

:Send "SET LIGHT ON TIME 0.25"

:Wait 0.5

:Send "SET LIGHT ON TIME 0.25"

:Wait 0.5

:Send "SET LIGHT ON TIME 0.25"

:Wait 0.5

:Send "SET LIGHT ON TIME 0.25"

:Wait 0.5

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:Wait 0.5

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:Wait 0.5

:Send "SET LIGHT ON TIME 0.25"

:Wait 0.5

:Send "SET LIGHT ON TIME 0.25"

:Wait 0.5

:Send "SET LIGHT ON TIME 0.25"

:Wait 0.5

:EndPrgm

Progression 2

Define blink2()=

Prgm

:Send "SET LIGHT ON BLINK 2 TIME 5"

:EndPrgm

Blink Running - Changing the Frequency



Progression 3

Define blink3()=

Prgm

:For n,1,5

:Send "SET LIGHT ON TIME 0.25"

:Wait 0.5

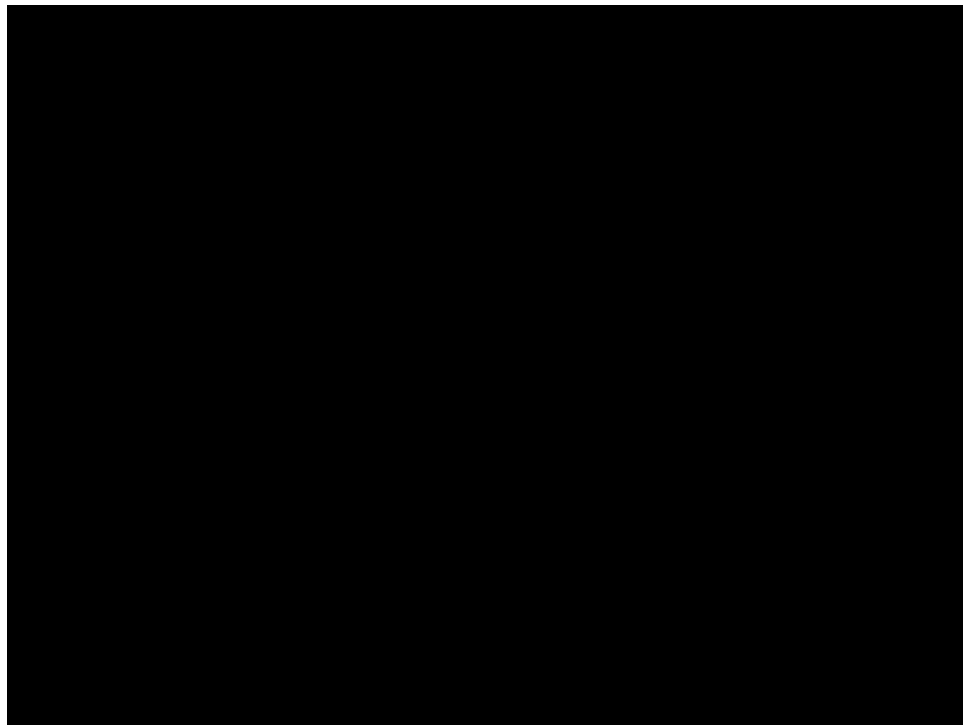
:EndFor

:EndPrgm

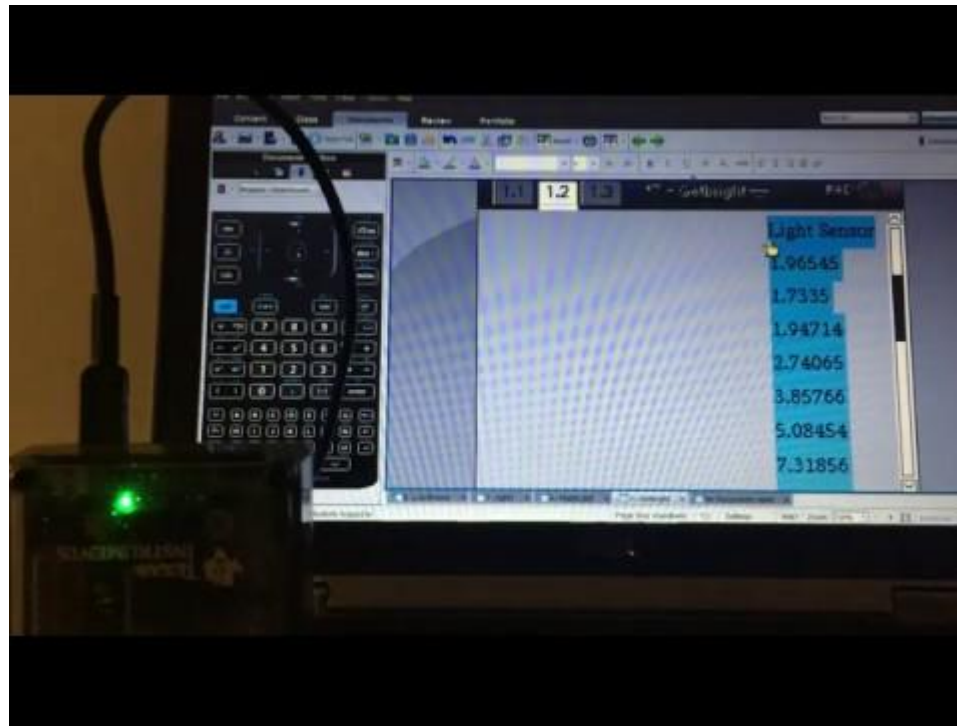
Extension prompts

- Generalize the program based on input of frequency and time.
- Come up with 3 ways to make the light blink 20 times.

RGB Fade In Action

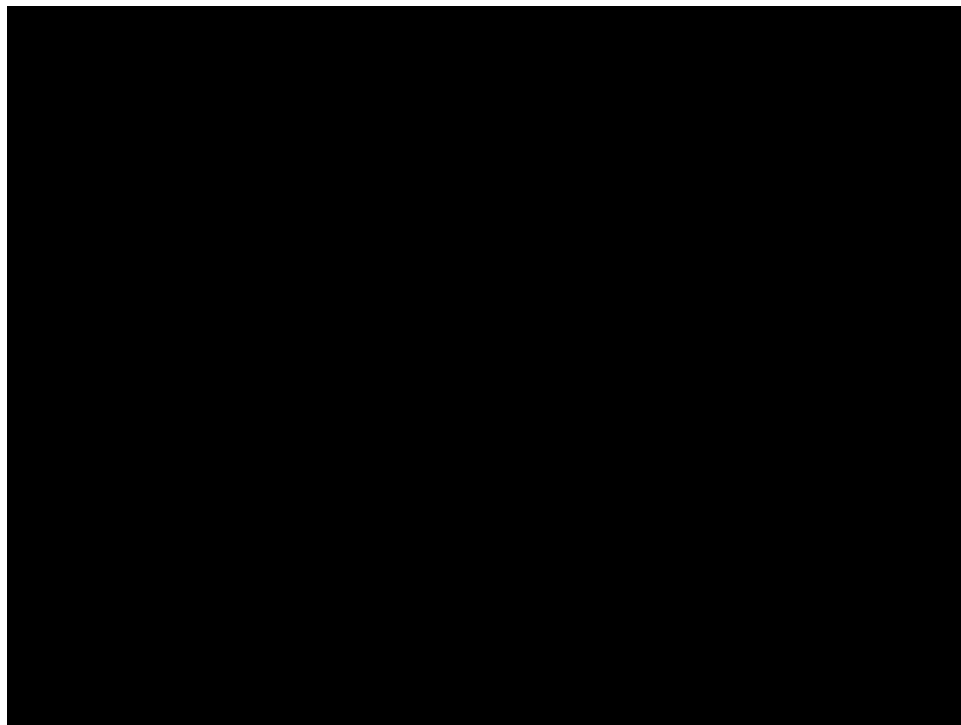


Brightness



Data collection and analysis

Inverse square relationship easy to discover





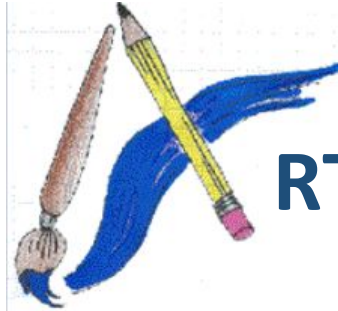
CIENCE



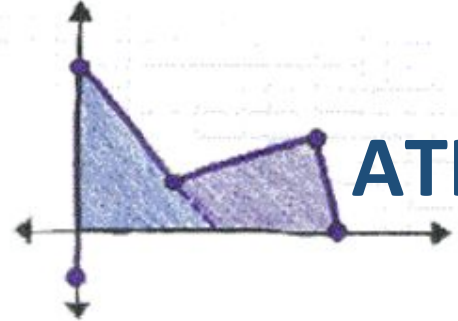
ECHNOLOGY



NGINEERING

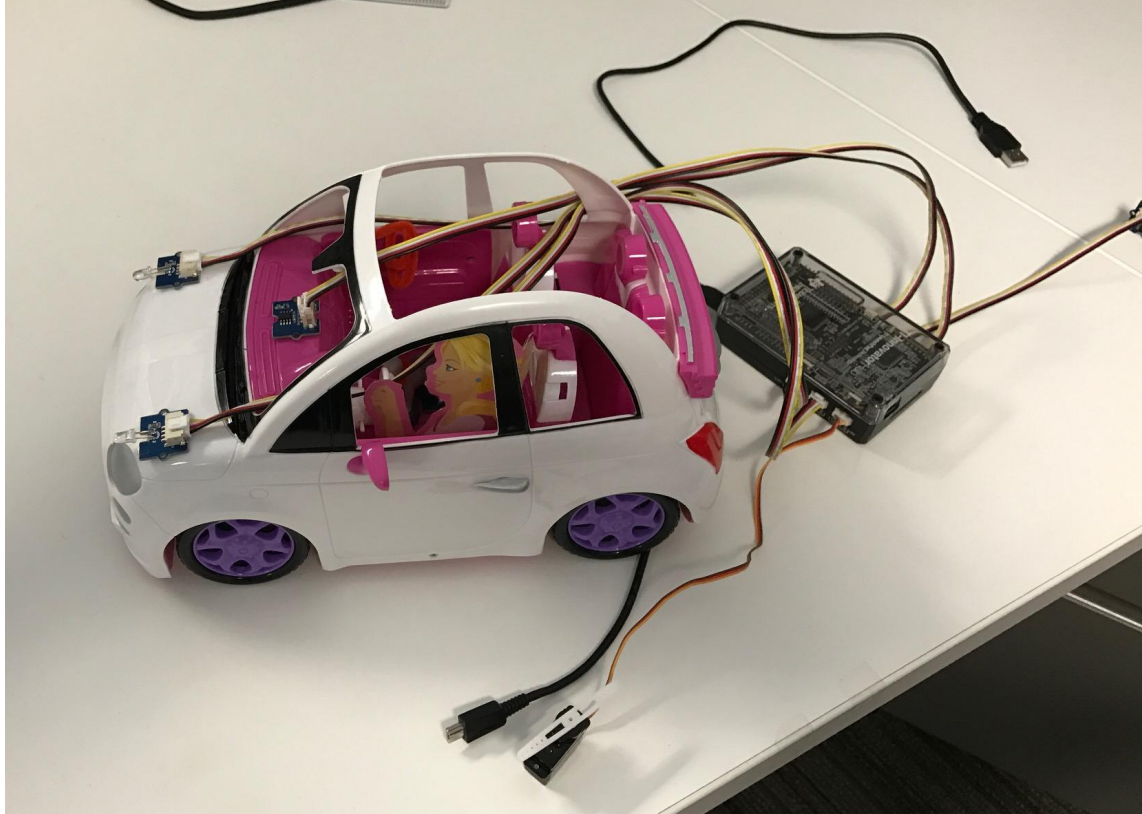


RT

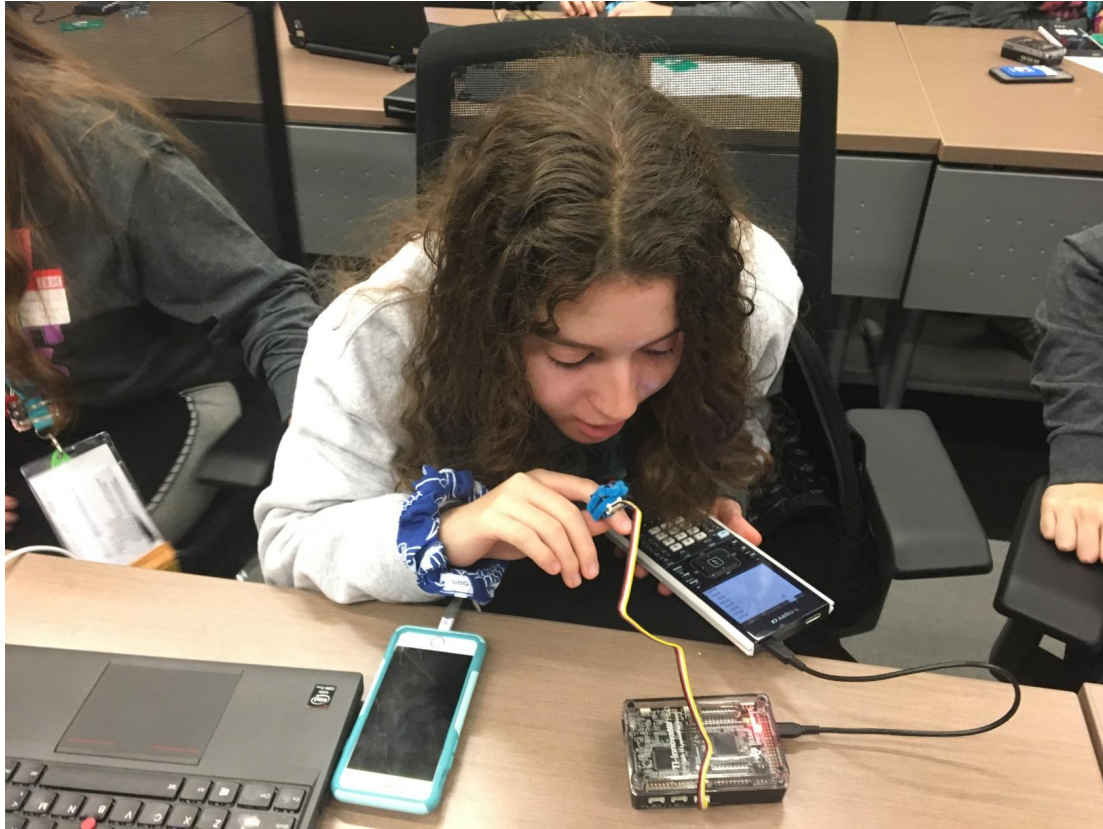


ATH

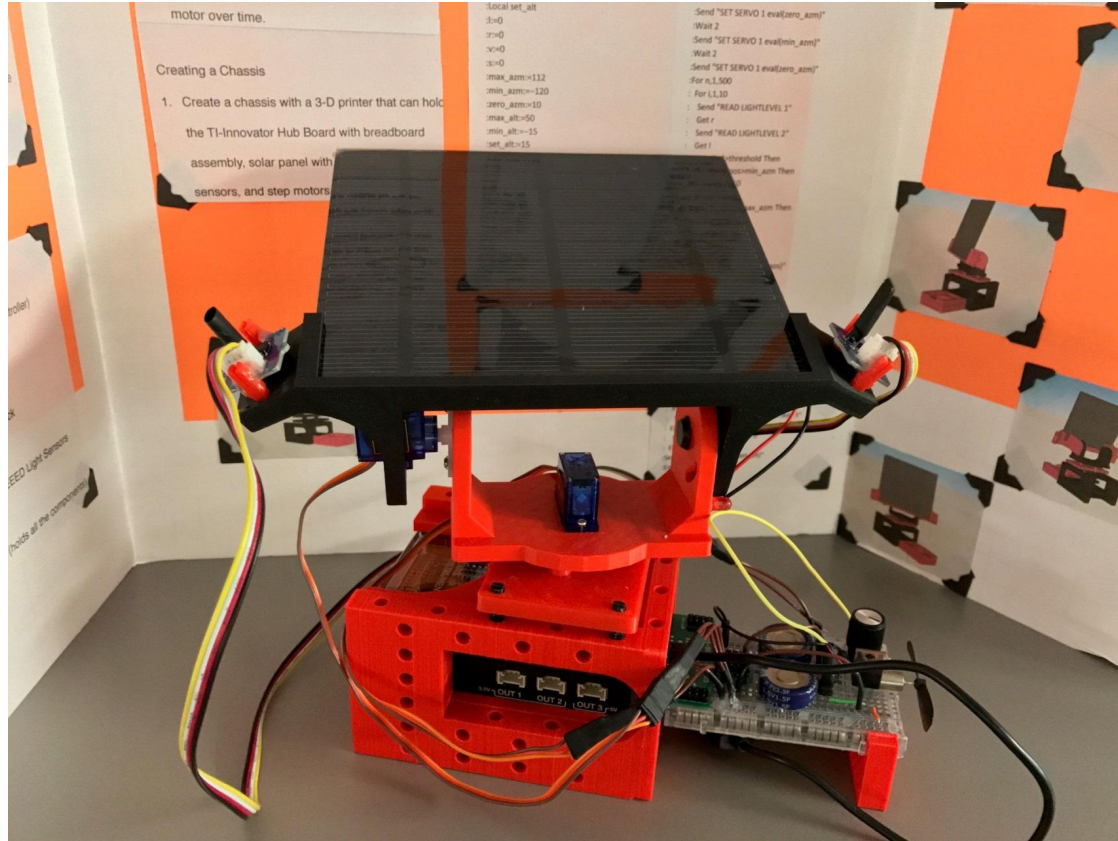
Pet Protector Car Alarm



Mood Ring



Solar Tracker



Maker Space Sculptures (accompanied by light and music)

