

CODING IS EVERYWHERE

Coding in Computers





Note to Librarians, Teachers, and Parents:

Blastoff! Readers are carefully developed by literacy experts and combine standards-based content with developmentally appropriate text.

Level 1 provides the most support through repetition of high-frequency words, light text, predictable sentence patterns, and strong visual support.

Level 2 offers early readers a bit more challenge through varied simple sentences, increased text load, and less repetition of high-frequency words.

Level 3 advances early-fluent readers toward fluency through increased text and concept load, less reliance on visuals, longer sentences, and more literary language.

Level 4 builds reading stamina by providing more text per page, increased use of punctuation, greater variation in sentence patterns, and increasingly challenging vocabulary.

Level 5 encourages children to move from "learning to read" to "reading to learn" by providing even more text, varied writing styles, and less familiar topics.

Whichever book is right for your reader, Blastoff! Readers are the perfect books to build confidence and encourage a love of reading that will last a lifetime!

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Coding in Computers



How do the computers in your home work?

They use a language
made of 1s and 0s.
This is called
binary code.

Binary Letters

In **binary code**, “**CODING IS FUN**” looks like...

C 0 1 0 0 0 0 1 1	I 0 1 0 0 1 0 0 1
O 0 1 0 0 1 1 1 1	S 0 1 0 1 0 0 1 1
D 0 1 0 0 0 1 0 0	0 0 1 0 0 0 0 0
I 0 1 0 0 1 0 0 1	F 0 1 0 0 0 1 1 0
N 0 1 0 0 1 1 1 0	U 0 1 0 1 0 1 0 1
G 0 1 0 0 0 1 1 1	N 0 1 0 0 1 1 1 0
0 0 1 0 0 0 0 0	

Binary code is hard for humans to read. We invented special **programming languages** that are easier.



```
TodoDB model.ij /IDBApplication3/Scripts/app
```

```
1 ( function ( ko , datacontext ) { }
2 <div style="background-image:url('/pix/samples/bg1.gif'); 
3 background . text - todoitem ;
4 height . text - :200px;">
5 <p>The image can be tiled across the background, while the text runs across the top.</p>
6 </div>
7
8 // persisted properties
9 <html> <p style="font-weight:bold;">HTML font code is done using CSS.</p>
10 <html> <body style="background-color:yellowgreen;color:white;">
11 <html> <.todolistid = data.todoidb;
12
13 // Non - persisted properties
14 <html> <errorMessage = ko , observable() ;
15 <p style="color:orange;">HTML font code is done using CSS.</p>
16 function todoitem(data) {
17     var self = this ;
18     data = data || {} ;
19
20     <p>You can make <span style="font-style:italic">some</span> the HTML 'span' tag.
21     <p>You can bold <span style="">parts</span> of your text using the HTML tag.</p>
```

CSS language

Computers can **translate** these into binary code.



Humans use programming languages to write **code**. Code tells the computer what to do.

Everything you do on a computer uses code. This could be typing your name or listening to music.

Computer Functions Controlled by Code

menu

camera

date and time

window

program



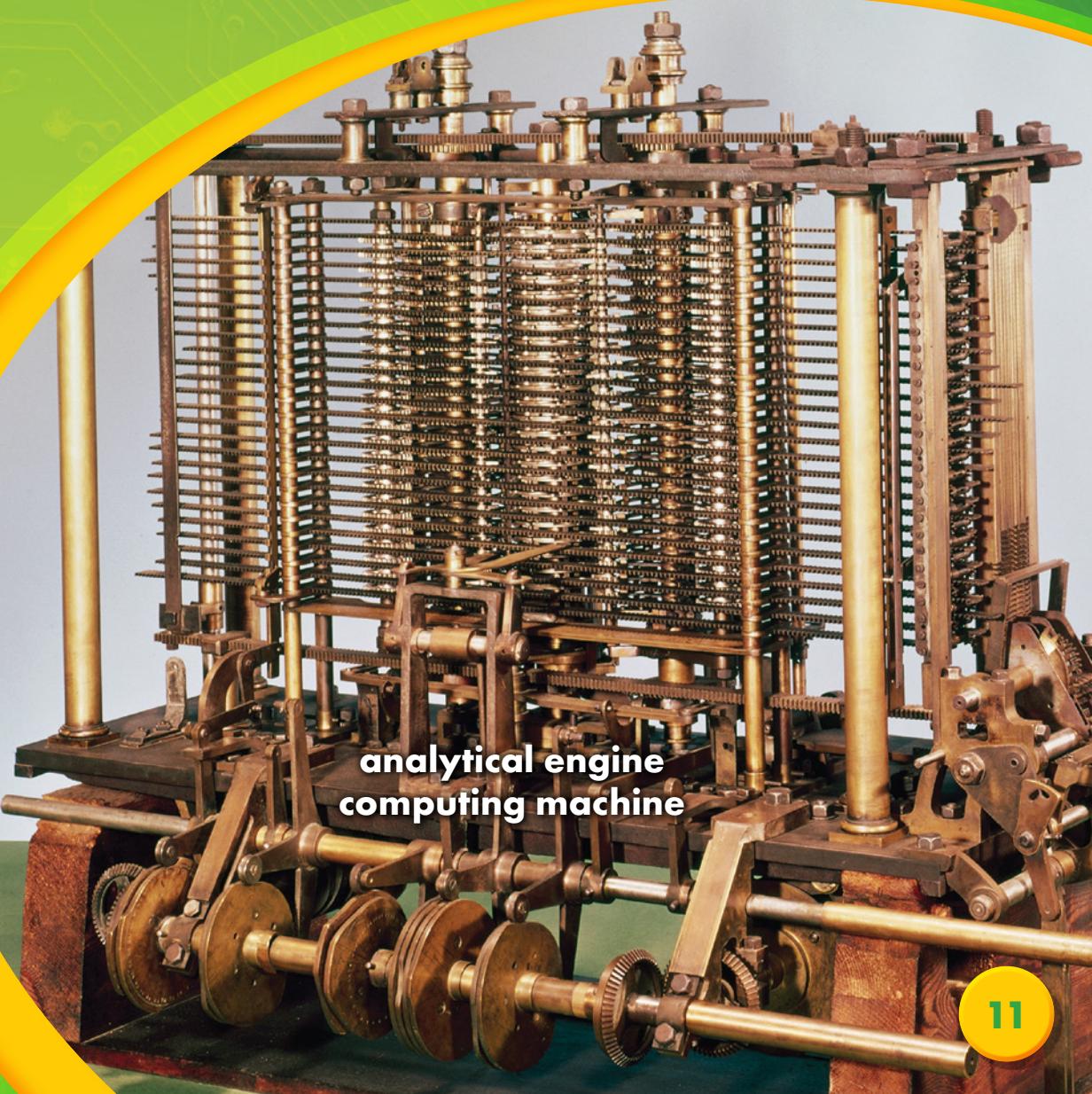
The History of Coding in Computers



Ada
Lovelace

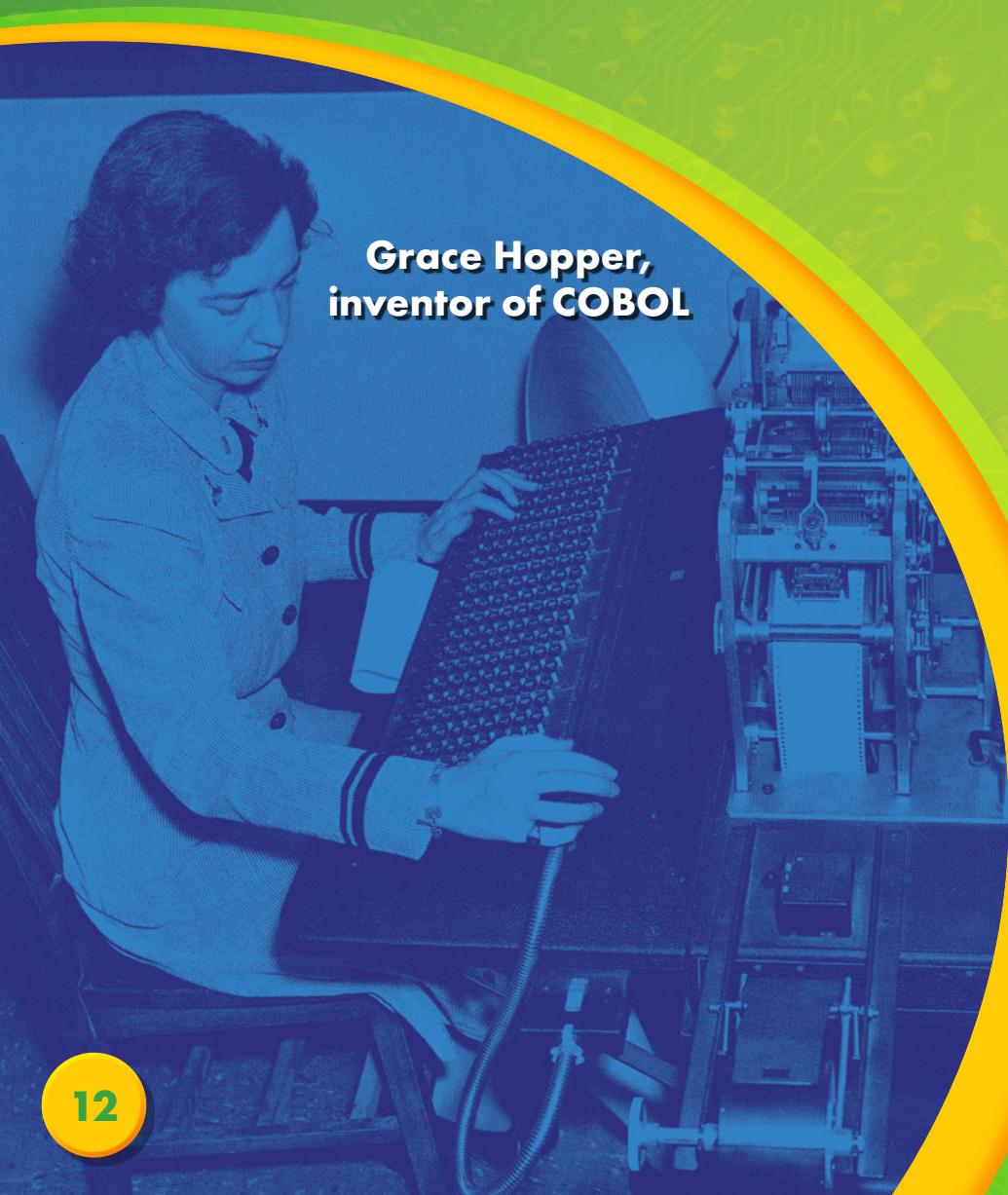
In 1843, Ada Lovelace wrote the first computer **program**.

Her friend invented a computing machine. Lovelace wrote notes on how it could work.



**analytical engine
computing machine**

Programming became popular in the 1950s. Many people created new programming languages.



**Grace Hopper,
inventor of COBOL**



learning **FORTRAN**

FORTRAN solved math problems.
COBOL was easy to use.



Today, there are many more languages. They have made programming computers even easier.

Almost anyone can learn to code!



How Does Coding Work in Computers?

Code is like a recipe.
You have to include
every step.

1. Mix flour, baking powder, salt, and sugar
2. Stir in milk, egg, and butter
3. Pour batter into muffin tins
4. Put in oven at 350° for 25 minutes



If a step is missing or wrong,
the code will not work.

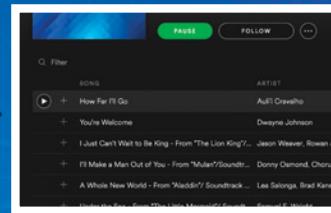


Say you want to listen to music. Code tells the computer to open the music program. It tells the program which song to play.

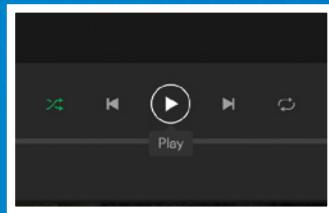
Listen to Music



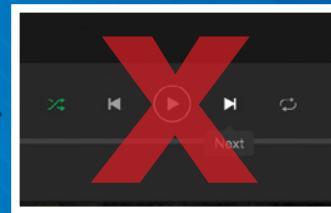
open program



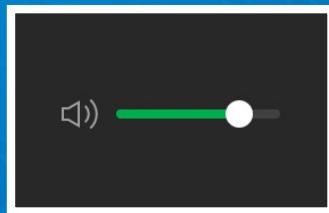
click on a song



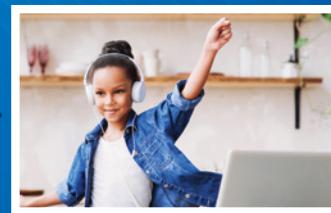
click play



click next,
wrong song!



move volume slider
right to hear music



listen to music!

Kids often learn to code with
Scratch or **Blockly**.

Scratch





What kind of code would you write? You could create an **app** or a game that people love to play!

Glossary

app—a program for a cell phone or other mobile device

binary code—a language of 1s and 0s

Blockly—a simple visual programming language that is easy to learn

COBOL—an English-like programming language invented in 1959 that could work on many different machines; COBOL is short for common, business-oriented language.

code—instructions for a computer

FORTRAN—a programming language for science and math; FORTRAN is short for formula translation.

program—a set of rules for a computer that performs a specific function

programming languages—special languages that humans use to talk to computers

Scratch—a visual programming language that is easy to learn

translate—to turn words from one language into a different one

To Learn More

AT THE LIBRARY

Lyons, Heather. *Coding to Create and Communicate*. Minneapolis, Minn.: Lerner Publications, 2018.

Stanley, Diane. *Ada Lovelace, Poet of Science: The First Computer Programmer*. New York, N.Y.: Simon & Schuster Books for Young Readers, 2016.

Wainewright, Max. *How to Code: A Step-by-Step Guide to Computer Coding*. New York, N.Y.: Sterling Publishing, 2016.

ON THE WEB

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2. Enter “coding in computers” into the search box.
3. Click the “Surf” button and you will see a list of related web sites.

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