CTC Past Projects for Grades 4-6
Selected CTC 2016 Projects

- Tick Tock Clock
- Smart Shopper
- How to prevent sharks from eating you
- Soccer Penalty Kick
- Computational Thinking Project: Elements Of Steel
- Gobo Adventures
- Protein Builder
Selected CTC 2017 Projects

- Earth's Invasion: The Clock is Ticking!
- Learning about Mythology
- Protein Synthesis Using Bacteriophage
- Computational Model of a Projectile's Trajectory
- Poverty
- Lead Ammunition: Harmful to Raptor & Harmful to Humans
Lead Ammunition: Harmful to Raptor & Harmful to Humans
[3\textsuperscript{rd} prize winner]

• Motivations
  – Fragments of lead ammunition are killing wildlife.
  – They are also in the meat you eat.
  – Hunters will stop using lead ammunition when they understand about this.

• Design Ideas
  – Write a Scratch program to tell the story.

  A \textit{hunter} shoots an \textit{elk} with a lead \textit{bullet}.

  A \textit{bald eagle} flies over to scavenge on the carcass and eats some ammunition \textit{fragments}.

  The eagle later dies, and the land is polluted by lead.
Sprites used in Scratch

- Hunter (with a gun) – shoot & walk over

- Bald eagle (two costumes to simulate flying)
  - Move towards the deer & bullet fragments
  - Then disappear at the boundary (dies)

- Deer (two costumes)
  - Standing deer
  - Carcass with lead fragments
  - Falling simulated by turning
Sprites (Continued)

- Bullet fragments
- Area contaminated by lead fragments
- Stages (woods, star, etc.)

Warning message

Keep your eye on the lead bullet. See how it shatters and where the lead fragments are left behind.
Shooting Scene

Script for the bullet fragments:

move 235 steps
repeat until touching Sprite14 ▼ ?
  move 20 steps
switch costume to costume2 ▼
play sound StringPluck ▼
stop all sounds

Script (partial) for the hunter sprite:

when clicked
wait 9 secs
move 140 steps
wait 2 secs
move 120 steps
wait 3 secs
move 120 steps
go to front
glide 1 secs to x: 230 y: -139

if touching Sprite14 ▼ ? then
  move 45 steps
Eagle Scavenging Scene

An eagle eats some lead fragments.

The eagle flies over (from upper left), descends, take off, and flies away (towards lower right).

*Flying:* switch between two costumes to show wing flapping.

Keep your eye on the lead bullet. See how it shatters and where the lead fragments are left behind.
Ending Scene

Polluted area in the grassland

Dead animals