



# Summer Camp 2013

7 - 8 August 2013, UNR

This document was created using the  ${\rm IAT}_{\rm E}{\rm X}$  module in NCLab.



Happy Birthday Cora!

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#### 1 What is NCLab?

NCLab is a creative web browser platform where anyone can explore, play, work, and collaborate using quality open source software. Every user obtains free disk space on the cloud and a daily amount of free computing time. Interactive courses, learning materials, and additional computing resources can be purchased for small fees which are used for user support, and NCLab development and maintenance.

NCLab provides a variety of modules including computer programming in several languages, 3D CAD modeling, 3D molecular modeling, computing with GNU Octave (open source alternative to MATLAB), document preparation with LaTeX, symbolic and numerical math, and much more. Users can access their accounts at any time and from any place that has Internet access.

The NCLab service is perfect for schools where no software besides a modern web browser needs to be installed or maintained. In addition to continuously improving NCLab's service, the NCLab Team travels a lot to schools, training teachers in using NCLab for computer programming, 3D CAD modeling, and other STEM courses.

#### 2 First NCLab Summer Camp

The first NCLab Summer Camp took place on August 7 - 8, 2013 in one of the best-equipped, 50-seat computer classrooms at UNR.



Our objective was to share with K-12 students some of our passion for computers, programming, and computing. The classroom was packed by kids of ages between 4 and 16, plus a few around forty. We have never seen anyone eat their lunch that quickly in order to get back to their projects!



In the rest of this booklet you will find sample 3D designs and computer programs created by students during the Camp. Big THANK YOU for participating, and please SPREAD THE WORD. We are looking forward to organizing another NCLab Summer Camp next year!

Your NCLab Team

#### 3 3D Designs

All designs in this section were created using the PLaSM module in NCLab. PLaSM (Programming Language of Solid Modeling) is a programming language based on Python that makes it possible to create, transform, and manipulate 3D objects using simple Python programs.

#### 3.1 Pagoda by Grace Hong



### 3.2 Silver Legacy Resort by Dhruv Rohatgi



### 3.3 Turret by Ian Hong



3.4 Biplane by Alex Tiblempski



3.5 Karel by Leo Phelan



# 3.6 Hot Air Balloon by Max Slater



## 3.7 Napkin Ring by Kyle Pong



3.8 Violin Bow by Oliver Leitner



3.9 Shield by Ben Harvey



3.10 Rocket Ship by Alex Timblepski



### 3.11 Turtle by Max Johnson



3.12 Piggy Bank by Jack Garman



### 3.13 "Potato" by Kamran Kazemi



### 3.14 "Impossible" by Drew Swall



### 3.15 Temple by Max Slater



#### 4 Karel and Python Programs

#### 4.1 Clean Up! by Cora Douglas

Karel needs to clean up! Your task is to write a program for the robot to collect all gems and move them on the trays, then enter the home square.



Solution:

1	while not home
2	while not wall
3	go
4	if gem
5	get
6	if tray
7	put _
8	right

### 4.2 Dinosaur Pyramid by Nanami Duncan

## Dinosaur pyramid

Grab all of the gems to get home!

#### Don't anger the guard dinosaur! Get home by putting gems in "the gates".

Here is the corresponding maze:



And this is the solution program:

```
1 # complete dino maze
2 # body
3 repeat 3
4 go
5 left
6 repeat 2
7 go
8 right
9 # bottom level
10 repeat 7
11 get
12 go
13 repeat 2
14 left
15 get
16 go
19 # middle level
20 left
21 get
22 repeat 5
23 go
24 get
25 repeat 2
26 right
27 go
28 left
29 go
30 right
31 get
22 # top level
33 repeat 3
34 go
35 get
36 right
37 # to the gate
38 repeat 4
99
40 left
41 repeat 2
42 go
40 left
41 repeat 2
42 go
43 # the gates
44 repeat 6
45 put
46 go
51 repeat 6
47 repeat 6
48 put
49 left
55 go
56 left
57 # home
58 repeat 3
59 go
```

#### 4.3 Python Number Guessing Game by Yatin Chandar

The program chooses a random integer number between 0 and 99, and the task of the user is to guess it. The program always tells the user whether his/her guess was correct, too low, or too high.

