Project Omega Documentation

Release 0.0.0

Town Hall Pinball Studios

January 01, 2016

Contents

Town Hall Pinball Studios is working on a customized pinball machine. The overall plan is to:

- Use an existing pinball machine, "No Fear"
- Completely rebrand it with a new play-field, backglass, and cabinet artwork
- Design a new theme
- Design a new ruleset
- Design and/or use new animations, sound effects, and music

We are using the P-ROC to interface with the pinball machine and our own software to implement the game.

Since the name of the game has not yet been decided, this repository will be called "project-omega" for now. It will be renamed in the future.

Feel free to clone the repository and see development in action. This code can be run without an actual pinball machine. Anything and everything can be broken at anytime.

CHAPTER 1

User's Guide

1.1 Getting Started

You do not need a pinball machine to explore the software. Follow the steps below to create a virtual machine for development.

1.1.1 Requirements

- VirtualBox
- Vagrant

Mac OS X Specific

- X11, Xquartz

Windows Specific

- Cygwin
- X11, Xming

1.1.2 Running

Setup a development environment as follows:

Open a terminal (open Cygwin in Windows) and clone the repository:

```
mkdir town-hall-pinball
cd town-hall-pinball
git clone https://github.com/town-hall-pinball/project-omega.git
```

Initialize the virtual machine with:

```
cd project-omega
vagrant up
```

Wait for the command to complete, and run the software as follows:

```
vagrant ssh
pingame -d -s
```

A dot-matrix display should appear. Use *Control-C* to exit.

1.1.3 Extras

Now install the extras pack for additional fun:

```
cd /vagrant/resources
curl -O http://blackchip.org/town-hall-pinball/extra.tar.gz
tar xf extra.tar.gz
rm extra.tar.gz
```

1.1.4 Next

Take a Tour

1.2 Tour

Start the software with:

```
pingame -d -s
```

When the dot-matrix display appears, use the mouse to click on it to obtain focus. Attract mode starts after the "Project Omega" banner.

Use the flipper buttons `[` and `]` to cycle through the attract mode panels.

Press `1` (one) to insert a coin.

Press `7` to enter service mode. In service mode, use the following keys:

- `7`: Enter
- `8`: Next
- `9`: Previous
- `0`: Exit

Using the service buttons, go to *Utilities* -> *Server* -> *Enable Server* and change the value to *Yes*. Open your web browser to view the web console:

http://localhost:9999/console

Press the *Exit* button and, go to *Browsers* -> *Music*. The *Next* and *Previous* buttons will change the current song. Use *Enter* to restart the song.

Visit the other browsers for *Sounds*, *Fonts*, *Images*, and *Movies*. When in the font browser, use the flippers `[` and `]` to rotate the text.

Explore other areas of the service mode. Once done, keep hititng *Exit* until you are back at the attract mode.

In the web console, the lamp matrix should be flashing to indicate a light show is running in attract mode.

In the web console, click on the magnifying glass icon to execute a ball search.

Click on the dotm-matrix display and A=activate an easter egg with the following flipper sequence using `[` for the left flipper, `]` for the right flipper, and `l` (elle) to hit the ball launch button:

- left
- left
- left
- right
- right
- right
- ball launch

Make a selection, and use `s` for the start button.

1.3 Keyboard Bindings

Key	Action
,	Slingshot, Left
.	Slingshot, Right
0	Service, Exit
1	Coin, Left
7	Service, Enter
8	Service, Down
9	Service, Up
[	Flipper, Left
]	Flipper, Right
d	Trough, 4
l	Ball Launch Button
s	Saucer
control-s	Buy Extra Ball Button
shift-s	Start Button

CHAPTER 2

Machine Reference

2.1 Coils by Device

Device	Name	Number	Tags	Notes
C01	popper	40		
C02	auto_plunger	41		
C03	magnet_right	42		
C04	kickback	43		
C05	magnet_center	44		
C06	magnet_left	45		
C07	knocker	46		
C08	drop_target_down	47		
C10	slingshot_right	49		
C11	slingshot_left	50		
C12	drop_target_up	51		
C14	trough	53		
C15	saucer	54		
C16	toy	55		

2.2 Coils by Name

Device	Name	Number	Tags	Notes
C02	auto_plunger	41		
C08	drop_target_down	47		
C12	drop_target_up	51		
C04	kickback	43		
C07	knocker	46		
C05	magnet_center	44		
C06	magnet_left	45		
C03	magnet_right	42		
C01	popper	40		
C15	saucer	54		
C11	slingshot_left	50		
C10	slingshot_right	49		
C16	toy	55		
C14	trough	53		

2.3 Flashers by Device

Device	Name	Number	Tags	Notes
C17	flipper_return	56		
C18	spinner	57		
C19	circle_center	58		
C20	ramp_right	59		
C21	toy	60		
C22	insert_explode	61		
C23	ramp_left	62		
C24	outside	63		
C25	auto_fire	64		
C26	insert_top_left	65		
C27	insert_top_right	66		
C28	popper	67		

2.4 Flashers by Name

Device	Name	Number	Tags	Notes
C25	auto_fire	64		
C19	circle_center	58		
C17	flipper_return	56		
C22	insert_explode	61		
C26	insert_top_left	65		
C27	insert_top_right	66		
C24	outside	63		
C28	popper	67		
C23	ramp_left	62		
C20	ramp_right	59		
C18	spinner	57		
C21	toy	60		

2.5 Lamps by Device

Device	Name	Number	Tags	Notes
L11	circle_6	80		
L12	circle_7	81		
L13	circle_8	82		
L14	circle_9	83		
L15	circle_10	84		
L16	circle_11	85		
L17	playfield_left	86		
L18	circle_12	87		
L21	circle_center	88		
L22	circle_5	89		
L23	circle_4	90		
L24	circle_3	91		

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Table 2.1 – continued from previous page

Device	Name	Number	Tags	Notes
L25	circle_2	92		
L26	circle_1	93		
L27	playfield_right	94		
L28	playfield_center	95		
L31	scoop_center_arrow_1	96		
L32	u_turn_right_arrow	97		
L33	scoop_center_arrow_2	98		
L34	scoop_center_arrow_3	99		
L35	scoop_center_circle	100		
L36	scoop_center_arrow_4	101		
L38	orbit_left_sign	103		
L41	u_turn_left_arrow	104		
L42	u_turn_left_circle_1	105		
L43	u_turn_left_circle_2	106		
L44	u_turn_left_circle_3	107		
L45	scoop_left_arrow_1	108		
L46	scoop_left_arrow_2	109		
L47	scoop_left_arrow_3	110		
L48	playfield_far_left	111		
L51	orbit_left_arrow_2	112		
L52	ramp_left_circle_2	113		
L53	orbit_left_circle_3	114		
L54	ramp_left_circle_3	115		
L55	ramp_left_circle_1	116		
L56	ramp_left_arrow	117		
L57	orbit_left_arrow_1	118		
L61	saucer_arrow_1	120		
L62	saucer_arrow_2	121		
L63	ramp_right_circle_1	122		
L64	ramp_right_circle_2	123		
L65	ramp_right_circle_3	124		
L66	inlane_left	125		
L67	outlane_left	126		
L68	kickback	127		
L71	standup_target_top	128		
L72	standup_target_bottom	129		
L73	inlane_right	130		
L74	outlane_right	131		
L75	ramp_right_arrow_1	132		
L76	ramp_right_arrow_2	133		
L77	orbit_right_arrow_1	134		
L78	orbit_right_arrow_2	135		
L81	shoot_again	136		
L82	toy_left	137		Skull, left eye
L83	ramp_left_sign_bottom	138		
L84	ramp_left_sign_top	139		
L85	toy_right	140		Skull, right eye
L86	ball_launch_button	141		
L87	buy_extra_ball_button	142		

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Device	Name	Number	Tags	Notes
L88	start_button	143		

2.6 Lamps by Name

Device	Name	Number	Tags	Notes
L86	ball_launch_button	141		
L87	buy_extra_ball_button	142		
L26	circle_1	93		
L15	circle_10	84		
L16	circle_11	85		
L18	circle_12	87		
L25	circle_2	92		
L24	circle_3	91		
L23	circle_4	90		
L22	circle_5	89		
L11	circle_6	80		
L12	circle_7	81		
L13	circle_8	82		
L14	circle_9	83		
L21	circle_center	88		
L66	inlane_left	125		
L73	inlane_right	130		
L68	kickback	127		
L57	orbit_left_arrow_1	118		
L51	orbit_left_arrow_2	112		
L53	orbit_left_circle_3	114		
L38	orbit_left_sign	103		
L77	orbit_right_arrow_1	134		
L78	orbit_right_arrow_2	135		
L67	outlane_left	126		
L74	outlane_right	131		
L28	playfield_center	95		
L48	playfield_far_left	111		
L17	playfield_left	86		
L27	playfield_right	94		
L56	ramp_left_arrow	117		
L55	ramp_left_circle_1	116		
L52	ramp_left_circle_2	113		
L54	ramp_left_circle_3	115		
L83	ramp_left_sign_bottom	138		
L84	ramp_left_sign_top	139		
L75	ramp_right_arrow_1	132		
L76	ramp_right_arrow_2	133		
L63	ramp_right_circle_1	122		
L64	ramp_right_circle_2	123		
L65	ramp_right_circle_3	124		
L61	saucer_arrow_1	120		

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Table 2.2 – continued from previous page

Device	Name	Number	Tags	Notes
L62	saucer_arrow_2	121		
L31	scoop_center_arrow_1	96		
L33	scoop_center_arrow_2	98		
L34	scoop_center_arrow_3	99		
L36	scoop_center_arrow_4	101		
L35	scoop_center_circle	100		
L45	scoop_left_arrow_1	108		
L46	scoop_left_arrow_2	109		
L47	scoop_left_arrow_3	110		
L81	shoot_again	136		
L72	standup_target_bottom	129		
L71	standup_target_top	128		
L88	start_button	143		
L82	toy_left	137		Skull, left eye
L85	toy_right	140		Skull, right eye
L41	u_turn_left_arrow	104		
L42	u_turn_left_circle_1	105		
L43	u_turn_left_circle_2	106		
L44	u_turn_left_circle_3	107		
L32	u_turn_right_arrow	97		

2.7 Switches by Device

Device	Name	Number	Tags	Notes
S11	ball_launch_button	32	user	
S13	start_button	34	user	
S14	tilt	35	user	
S15	shooter_lane	36		
S16	spinner	37	live	
S17	outlane_right	38	live	
S18	return_right	39	live	
S21	tilt_slam	48	user	
S22	coin_door	49	user	
S23	buy_extra_ball_button	50	user	
S25	kickback	52	live	
S26	return_left	53	live	
S27	slingshot_left	54	live	
S28	slingshot_right	55	live	
S31	trough_jam	64		
S32	trough	65		
S33	trough_2	66		
S34	trough_3	67		
S35	trough_4	68		
S37	subway_center	70	live	
S38	subway_left	71	live	
S41	popper	80	live	
S42	popper_2	81	live	

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Table 2.3 – continued from previous page

Device	Name	Number	Tags	Notes
S46	magnet_left	85	live	
S47	magnet_center	86	live	
S48	magnet_right	87	live	
S51	drop_target	96	live	
S54	wireform_left	99	live	
S55	u_turn	100	live	
S56	standup_target_bottom	101	live	
S57	startup_target_top	102	live	
S58	orbit_right	103	live	
S61	saucer	112	live	
S62	orbit_left	113	live	
S63	ramp_left_enter	114	live	
S64	ramp_left_middle	115	live	
S66	ramp_right_enter	117	live	
S67	ramp_right_exit	118	live	
SD1	coin_left	8	user	
SD2	coin_center	9	user	
SD3	coin_right	10	user	
SD4	coin_fourth	11	user	
SD5	service_exit	12	user	
SD6	service_down	13	user	
SD7	service_up	14	user	
SD8	service_enter	15	user	
SF2	flipper_right	1	user	
SF4	flipper_left	3	user	
SF6	flipper_right_up	5	user	

2.8 Switches by Name

Device	Name	Number	Tags	Notes
S11	ball_launch_button	32	user	
S23	buy_extra_ball_button	50	user	
SD2	coin_center	9	user	
S22	coin_door	49	user	
SD4	coin_fourth	11	user	
SD1	coin_left	8	user	
SD3	coin_right	10	user	
S51	drop_target	96	live	
SF4	flipper_left	3	user	
SF2	flipper_right	1	user	
SF6	flipper_right_up	5	user	
S25	kickback	52	live	
S47	magnet_center	86	live	
S46	magnet_left	85	live	
S48	magnet_right	87	live	
S62	orbit_left	113	live	
S58	orbit_right	103	live	

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Table 2.4 – continued from previous page

Device	Name	Number	Tags	Notes
S17	outlane_right	38	live	
S41	popper	80	live	
S42	popper_2	81	live	
S63	ramp_left_enter	114	live	
S64	ramp_left_middle	115	live	
S66	ramp_right_enter	117	live	
S67	ramp_right_exit	118	live	
S26	return_left	53	live	
S18	return_right	39	live	
S61	saucer	112	live	
SD6	service_down	13	user	
SD8	service_enter	15	user	
SD5	service_exit	12	user	
SD7	service_up	14	user	
S15	shooter_lane	36		
S27	slingshot_left	54	live	
S28	slingshot_right	55	live	
S16	spinner	37	live	
S56	standup_target_bottom	101	live	
S13	start_button	34	user	
S57	startup_target_top	102	live	
S37	subway_center	70	live	
S38	subway_left	71	live	
S14	tilt	35	user	
S21	tilt_slam	48	user	
S32	trough	65		
S33	trough_2	66		
S34	trough_3	67		
S35	trough_4	68		
S31	trough_jam	64		
S55	u_turn	100	live	
S54	wireform_left	99	live	

CHAPTER 3

Developer's Guide

3.1 Logging

Not much is logged by default. To enable additional logging, copy the `debug_sample.py` file in the top-most directory to `debug.py`. Uncomment the loggers to see the following information:

Logger	Description
pin.coil	Firing of coils/solenoids
pin.command	Command received from a web client
pin.data	Loading and saving of persistant state
pin.dmd	Dot-matrix stack, queue, and overlay handling
pin.event	Global event queue
pin.gi	General illumination lights
pin.keyboard	Key down and up events
pin.handler	Lifecycle events of the game handlers that implement the modes of the game
pin.lamp	Lamp activitiy. Light shows are not logged as these can be excessive.
pin.magic	Shows if switch events are accepted, rejected, or trigger by a given magic sequence
pin.mixer	Music and sounds being played
pin.resources	Loading of resource assets
pin.server	Lifecylce events for the web server
pin.shows	Lifecycle of scripted events to be shown to the user
pin.sim	Simulator activity as balls move around
pin.switch	Physical switches

3.2 Documentation and Testing

- Documentation: https://readthedocs.org/projects/project-omega
- CI: https://travis-ci.org/town-hall-pinball/project-omega
- Coverage: https://coveralls.io/r/town-hall-pinball/project-omega

Log in to the Vagrant virtual machine and change to the base directory:

```
cd /vagrant
```

3.2.1 Documentation

Build documents with:

```
paver doc
```

The output is placed in `build/doc`

3.2.2 Tests

Run the test suite with:

```
paver test
```

3.3 Adding Resources

Place resources in the corresponding directory under `resources`.

Create a name mapping to the actual file here:

https://github.com/town-hall-pinball/project-omega/blob/master/pin/game/config/resources.py

To verify, check the resource browsers in service mode found under *Utilities -> Browsers*