# Using Python on Wallaby

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# Configuration

- SSH
- PuTTY

# Basic Usage

- Save & Run
- Vim(equipped)
- root@pepper $~ python pythonTestRun.py

# Real-Time Debugging

- root@pepper $~ python

- Python 2.7.9 (default, 2018-03-15, 19:16:16)
- [GCC 4.9.2] on linux2
- Type "help", "copyright", "credits" or "license" for more information.
- >>>

# Extending python library with C

- Compile Libraries
- Library wallaby
- root@pepper $~ `gcc` `main.c` -lwallaby -fPIC -shared -o libtest.so

# Extending python library with C

- Ctypes library



```
root@pepper:~/Documents/KISS/Tachibana_Taki/cDLLTest/src# find / -name "*.so" |
grep "wallaby"
/usr/lib/libwallaby.so
/usr/lib/_wallaby.so
/usr/lib/.debug/libwallaby.so
root@pepper:~/Documents/KISS/Tachibana_Taki/cDLLTest/src# find / -name "*.a" | g
rep "wallaby"
/home/root/libwallaby/build/libwallaby.a
root@pepper:~/Documents/KISS/Tachibana_Taki/cDLLTest/src# python
Python 2.7.9 (default, Dec 23 2015, 19:16:16)
[GCC 4.9.2] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> import ctypes
>>> lib = ctypes.CDLL('/home/root/Documents/KISS/Tachibana_Taki/cDLLTest/src/lib
test.so')
>>> lib.returnSomeAnalogValue(2)
So exciting to code with Miyamizu Mitsuha-chan!
1145
>>>
```
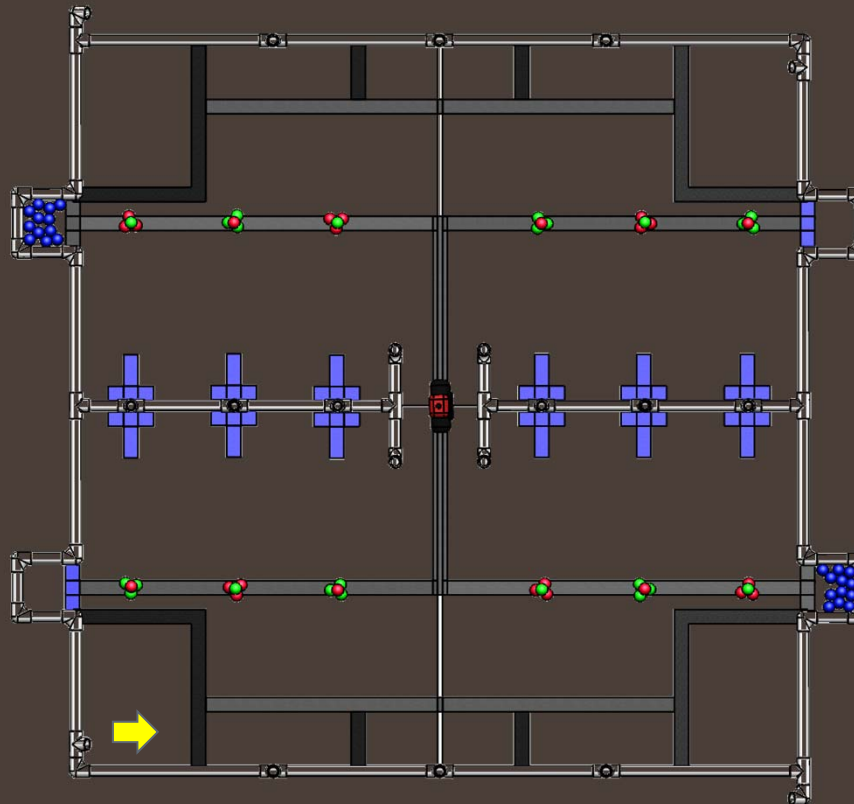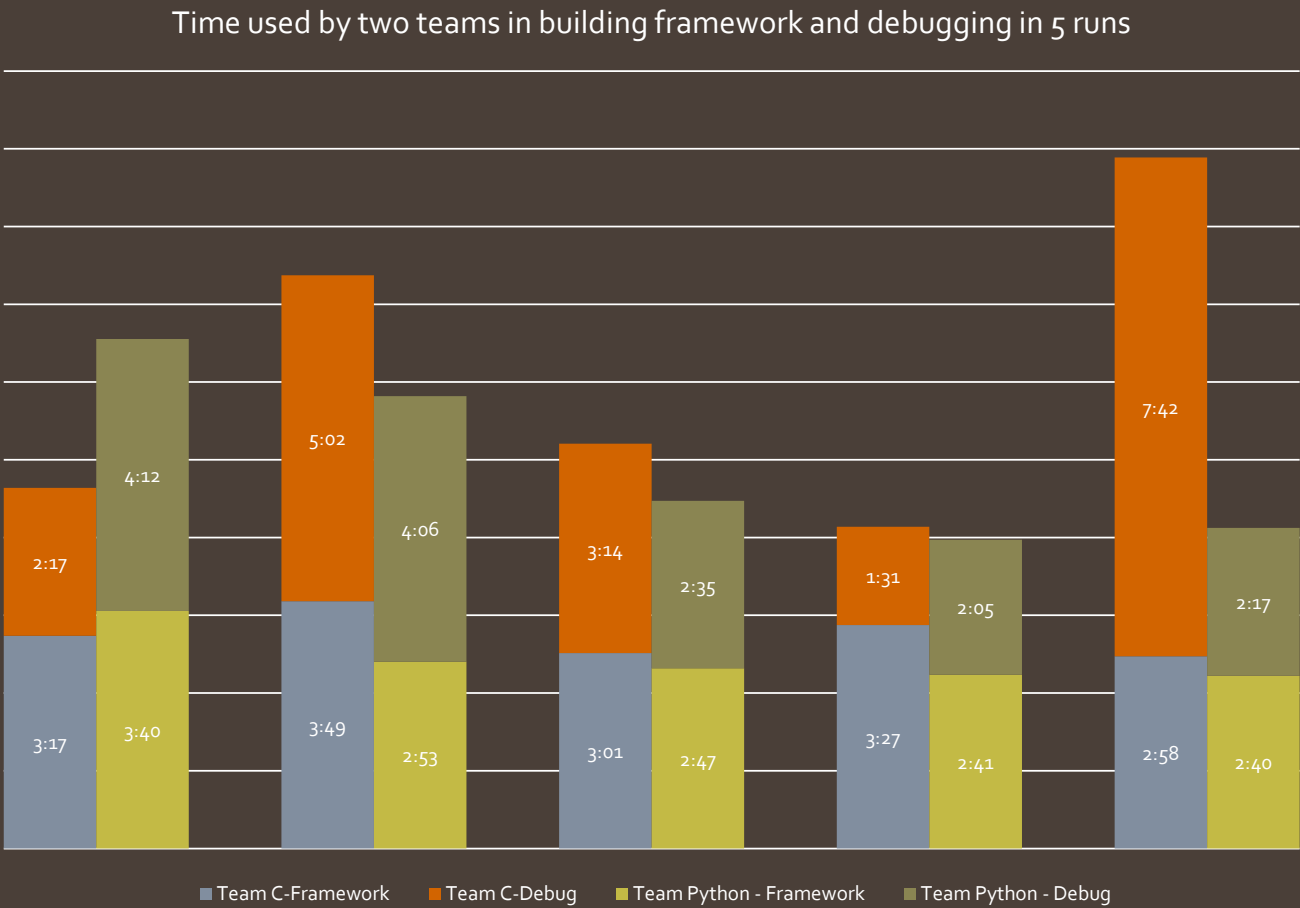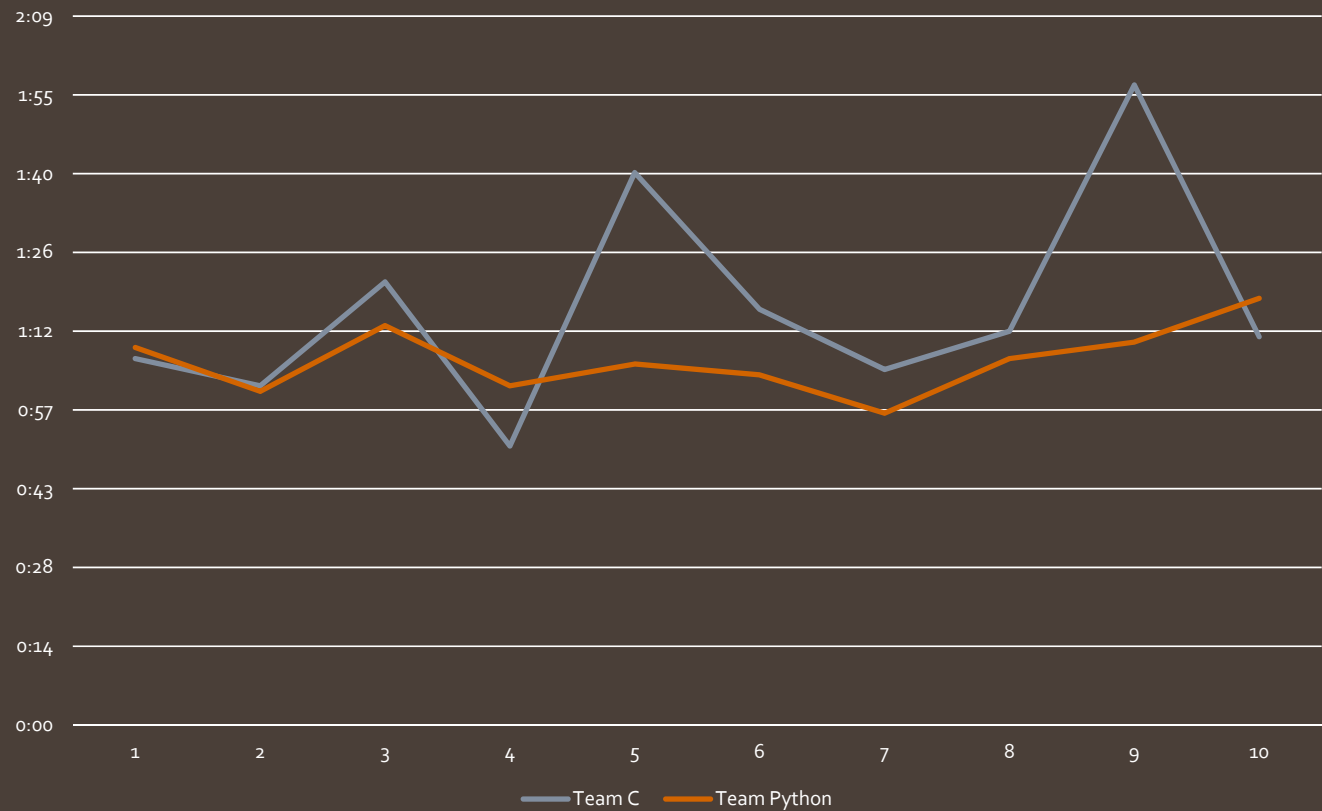
# Experiences

- Drive wallaby from one starting area to the end
- Follow black line
- Collect poms(at least 3)

# Experiences

## Time used by two teams in building framework and debugging in 5 runs



Legend: ■ Team C-Framework  ■ Team C-Debug  ■ Team Python - Framework  ■ Team Python - Debug

# Experiences

## Task 2: Catch frisbee in random height

### Time used to catch frisbee



Team C — Team Python

# Experiences

$$\text{H}_0: \mu_C = \mu_{py}$$
$$\text{H}_\alpha: \mu_C > \mu_{py}$$
$$\bar{\text{x}}_C = \sum_{i=1}^{n} x_{C_i} = 76.3, \bar{\text{x}}_{py} = \sum_{i=1}^{n} py_i = 66.7$$
$$\text{s}_{\text{x}_C} = 19.4196, \text{s}_{\text{x}_{py}} = 6.14727$$
$$pVal = 0.08239$$

# Advantages and Future

- Efficiency isn't a big problem.
- More support!

# Key reference and Legal

- [1] Cai, X., Langtangen, H.P., and Moe, H.: 'On the Performance of the Python Programming Language for Serial and Parallel Scientific Computations', Scientific Programming, 2005, 13, (1)

- [2] Free Software Foundation: 'GCC 4.9.2 Manual', in Editor (Ed.)^(Eds.): 'Book GCC 4.9.2 Manual' (2014, edn.), pp.

- [3] Levine, J.R.: 'Linkers and Loaders' (Morgan Kaufmann, 2000. 2000)

- [4] Python Software Foundation: 'Python v2.7.9 Release Note', in Editor (Ed.)^(Eds.): 'Book Python v2.7.9 Release Note' (Python Software Foundation, 2014, edn.), pp.

- [5] Rossum, G.v.: 'Loading dynamic link libraries', in Editor (Ed.)^(Eds.): 'Book Loading dynamic link libraries' (Python Software Foundation, 2008, edn.), pp.

Questions?

# Censored

- Sensored