



# Server CDR Presentation

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# Updates

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- Python lessons completed
- PyCharm integrated with Github
- Current data packing/unpacking code works
  - Most current code can be found in Github repository
    - `scel-hawaii/weatherbox-server`

# Data Packing Methods Tried

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- Manual Parsing
  - Issue: Did not work on test data as I did not understand data format at the time
- BitArray
  - Issue: Breaks apart a string of bits but did not pack them properly for use
- Struct
  - Past Issue: Was difficult for me to understand until recently
  - Code currently uses this method

# Current Code

Data-Translator.py x

```
import struct
import binascii

def pack(schema, address, overflow_num, uptime_ms, n, batt_mv, panel_mv, bmp085_press_pa, bmp085_temp_decic, humidity_centi_pct, apogee_2_m2):
    struct_fmt = 'H'+ 'H'+ 'B'+ 'I'+ 'B'+ 'H'+ 'H'+ 'I'+ 'h'+ 'H'+ 'H'
    packed_data = struct.pack(struct_fmt, schema, address, overflow_num, uptime_ms, n, batt_mv, panel_mv, bmp085_press_pa, bmp085_temp_decic, humidity_centi_pct, apogee_2_m2)
    return packed_data

def unpack(packed_data):
    struct_fmt = 'H'+ 'H'+ 'B'+ 'I'+ 'B'+ 'H'+ 'H'+ 'I'+ 'h'+ 'H'+ 'H'
    unpacked_data = struct.unpack(struct_fmt, packed_data)
    return unpacked_data
```

```
#Basic Test For Packing and Unpacking
```

```
#Packed test data
```

```
x = pack(5,151,8,300,2,25,10,45,49,10,55)
```

```
#Print each packed data out in hex on separate lines
```

```
for each in x:
```

```
    print binascii.hexlify(each)
```

```
#Print unpacked data to verify it is correct
```

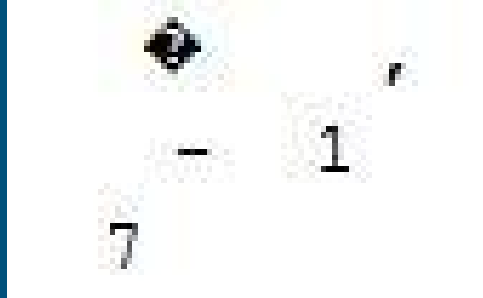
```
print unpack(x)
```

# Code Output

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Original Data: 5, 151, 8, 300, 2, 25, 10, 45, 49, 10, 55

Packed Data:



# Packed Data in Hex

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Original Data: 5, 151, 8, 300, 2, 25, 10, 45, 49, 10, 55

Packed Data(Hex):

05	00
00	0a
97	00
00	00
08	00
00	2d
00	00
00	00
00	00
2c	00
01	31
00	00
00	0a
02	00
00	37
19	00

# Unpacked Data

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Original Data: 5, 151, 8, 300, 2, 25, 10, 45, 49, 10, 55

Unpacked Data: (5, 151, 8, 300, 2, 25, 10, 45, 49, 10, 55)

# Next Steps

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- Modify packing/unpacking functions to read from a file
  - Code should read packing format from a file rather than hard coded
- Test code on WeatherBox data
- Understand how data is currently being sent/received
  - Will work with Kenny on this
  - Would like to talk with Apple and XBEE teams about this as well