cse30 discussion 5

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raspberry pi setup redux

port forwarding

- Makes a local port available on the internet on a different port (not needed from UCSD-PROTECTED)
- This means you can ssh into your Raspberry Pi from outside your LAN
- Run `rpi_upnp.sh` from github.com/ibrahima/raspi_networking
  - Uses UPnP to automatically open an external port on your router
  - Default port is 10022
- `ssh pi@your-public-ip -p 10022`

dynamic dns

- Lets you set up a custom domain name for your public IP address (which could change)
- DuckDNS is a free no-nonsense service provider, feel free to use any other
- Detailed instructions are on github
- Once you've set this up, you can then do `ssh pi@you.duckdns.org -p 10022`

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ssh configuration

- Can store commonly used hosts in ~/.ssh/config (Linux/Mac)

```
Host rpi1
    Hostname me.duckdns.org
    Port 10022
    User pi
```

- If you set up an SSH key without a passphrase or use ssh-agent, you can avoid typing your password too
- Now you can just type ssh rpi1 and log in immediately!

any questions?

programming assignment 2

tips

- Come to lab hours
- If you're having issues with your Raspberry Pi, do the C parts first on ieng6 or your own computer
- If you get segfaults, run your program through gdb, get a backtrace
- Make sure to compile with -g for debug symbols

tips

- The array is sorted, so take advantage of this when appropriate
- Related to the above, make sure to keep the array sorted
- Make sure variables that need to live past the life of a function are heap allocated

questions?

arm assembly

instruction format

generating assembly from c

- `gcc source.c -S` will output source.s assembly
- `gcc -c -g -Wa,-a,-ad source.c > source.lst` will output a mixed C/assembly listing
- latter command taken from http://www.delorie.com/djgpp/v2faq/faq8_20.html

- Comment **every** line, every function

translating c to assembly

assembly examples and puzzles

fun note: tis-100

- There's an actual assembly language programming game called TIS-100 on Steam
- Haven't tried it but it could be fun and educational