Assignment 2

Binary File Reader

Binary File Format

The file “tracks.dat” contains binary data where each record is 16 bytes long. The fields in this binary data are as follows:

FIELD	Length in Bytes	Type
Latitude	4	Single precision float
Longitude	4	Single precision float
Altitude (in meters)	2	Signed integer
Name	5	5 characters – not necessarily null terminated. Unused characters are null.
Misc	1	See Next Slide

Misc Field

The Misc field is one byte in length and contains the following information:

FIELD	MOST SIGNIFICANT BIT	LEAST SIGNIFICANT BIT	VALUES
Id	1	0	0=unknown, 1=friend, 2=foe, 3=neutral
Category	3	2	0=ship, 1=ground vehicle, 2=airplane
Engaged	4	4	0=not engaged, 1=engaged
Reserved	7	5	Not used

What To Do

- “tracks.dat” is available in the ~tburger/class directory
- Your program is to read the provided data file and write the contents to standard output in a readable format.
- Each record is to be read in a single read operation.
- The information in the “Misc” field is to be extracted using shifts and masks.
- The file contains 4 data records – you must read and print all of them.
- Submit your program along with the output from your program
- Assignment is due on Wednesday September 28

Threshold Requirements

- All 4 records decoded properly

Objective Requirements

- Reasonable names for variables
- Proper indentation
- Follow style guide
- Submitted on time

Formatting Source

- In gvim issue the commands:
  - set ts=4
  - set expandtab

- Make sure you are not in insert mode and enter the command
  - gg=G

- To remove tabs from a source file use the linux expand tool
  - expand -t4 file_with_tabs.c > new_file.c

Expected Results

lat:32 lon:-117 alt:100 name:ABLE id:friend cat:airplane

lat:32.5 lon:-117.25 alt:200 name:BAKER id:foe cat:ground vehicle

lat:32.6 lon:-118 alt:0 name:CAT id:neutral cat:ship

lat:33 lon:-120 alt:-10 name:DOWN id:foe cat:ship engaged

lat:33 lon:-120.5 alt:10 name:Z id:foe cat:ship engaged