

## Caches

Below is a diagram showing the internal representation of a typical CPU cache. Answer as many questions as you can in the given time. If you do not know the answer, please speculate.

1. Describe briefly what you understand by the different fields and keywords mentioned in the diagram
2. For a given 32-bit address access from CPU, how does the system determine if and where exactly the data lies in the cache?
3. What address values contend for a given cache line?
4. Why do you need multiple ways in the cache?
5. Are there any other bit fields in the cache, e.g. to tell the state of each cache line?
6. What operations must operating system software perform on caches?"?
7. What else can you tell us about caches?

