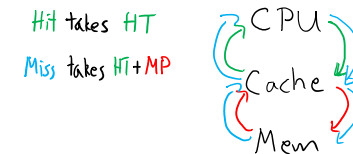
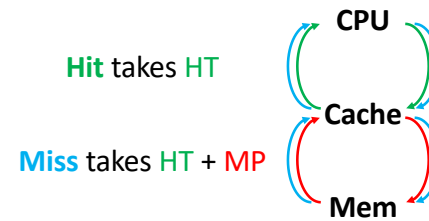


Review Questions

- ❖ Convert the following to or from IEC:
 - 512 Ki-books
 - 2^{27} caches
- ❖ Compute the average memory access time (AMAT) for the following system properties:
 - Hit time of 1 ns
 - Miss rate of 1%
 - Miss penalty of 100 ns

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Aside: Units and Prefixes (Review)

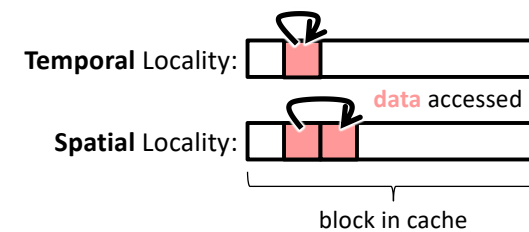
- ❖ Here focusing on large numbers (exponents > 0)
- ❖ Note that $10^3 \approx 2^{10}$
- ❖ SI prefixes are *ambiguous* if base 10 or 2
- ❖ IEC prefixes are *unambiguously* base 2

SIZE PREFIXES (10^x for Disk, Communication; 2^x for Memory)

SI Size	Prefix	Symbol	IEC Size	Prefix	Symbol
10^3	Kilo-	K	2^{10}	Kibi-	Ki
10^6	Mega-	M	2^{20}	Mebi-	Mi
10^9	Giga-	G	2^{30}	Gibi-	Gi
10^{12}	Tera-	T	2^{40}	Tebi-	Ti
10^{15}	Peta-	P	2^{50}	Pebi-	Pi
10^{18}	Exa-	E	2^{60}	Exbi-	Ei
10^{21}	Zetta-	Z	2^{70}	Zebi-	Zi
10^{24}	Yotta-	Y	2^{80}	Yobi-	Yi

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Notes Diagrams



Handout: Any Locality?

```
sum = 0;
for (i = 0; i < n; i++)
{
    sum += a[i];
}
return sum;
```

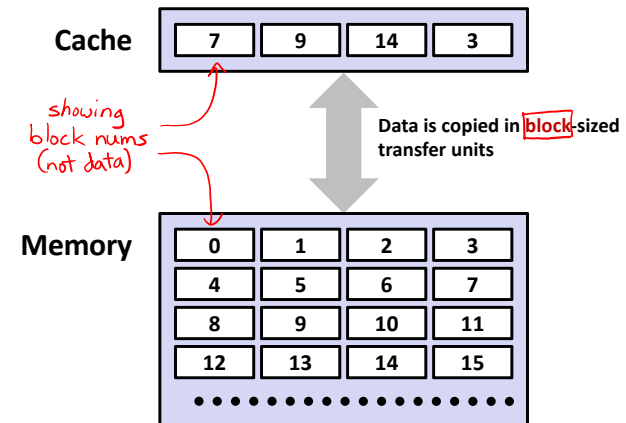
❖ Data:

- Temporal:
- Spatial:

❖ Instructions:

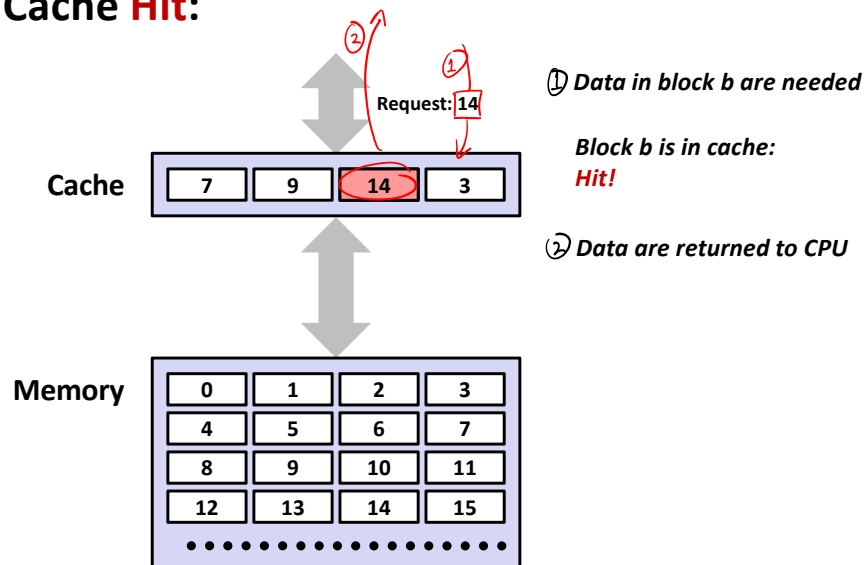
- Temporal:
- Spatial:

General Cache Mechanics



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Cache Hit:



Cache Miss:

