

Computer Architecture Assignment 8

Temporal localities

In temporal locality a recently used data/instruction is likely to be used again very soon. So the data/instruction is kept in cache memory such that it can be fetched easily and takes no time in searching for the same instruction.

Spatial locality

In spatial locality, all those data/instructions which are stored nearby (or similar) to recently used data/instructions have high chances of execution. So similar data/instructions are stored in cache memory for fast fetching.

For eg.

```
prod=1
```

```
for i in range(1,10):
```

```
    prod*= arr[i]
```

Here we can see that `frac` is used again and again so we keep storing `frac` in cache so that next time we call `frac`. Loads can be performed faster.

Whereas `arr[1],arr[2] ...` are similar kinds of data. If we load all values in cache we could perform overall functionality much faster.

Question 2:

No, I won't recommend using such a processor. We are using only memory based processors. It is going to take a huge amount of time to access data for instruction execution. As we know Sram can take upto 5 fold time as compared to that of register(flip-flops) whereas for Dram it can take upto 50-200 fold time. So using this type of processor is time consuming and needs an extreme amount of user patience. But this type of processor would be great if we talk about space efficiency.