Storage and the memory hierarchy

Locality has 2 types: temporal and spatial.

1. Temporal locality enables a memory location to be referenced multiple times if the location is a commonly accessed memory location.
2. Spatial locality enables a reference to a specific memory location to cover the neighboring locations. If a memory location was referenced once, then it makes the program easier to reference nearby locations.

A loop demonstrates the temporal and spatial locality properties in relation to instruction fetches. The number of loop iterations are directly proportional to the locality.

When fetching the instructions, the key property of locality enables the separation of the data and the instructions to prevent the risk of an overwrite.

Solid state disks

On a modern SSD, writing repeatedly to the same logical block address will wear out the block after roughly 100,000 writes. The block can no longer be used after it wears out. If the entire block has been erased, then a page can be written on previous block location.