MAKE
SCHOOL

ARRAYS & LINKED LISTS

ARRAYS

Contiguous piece of memory

Same size storage space at each index

Static - Memory allocated once, size can’t change

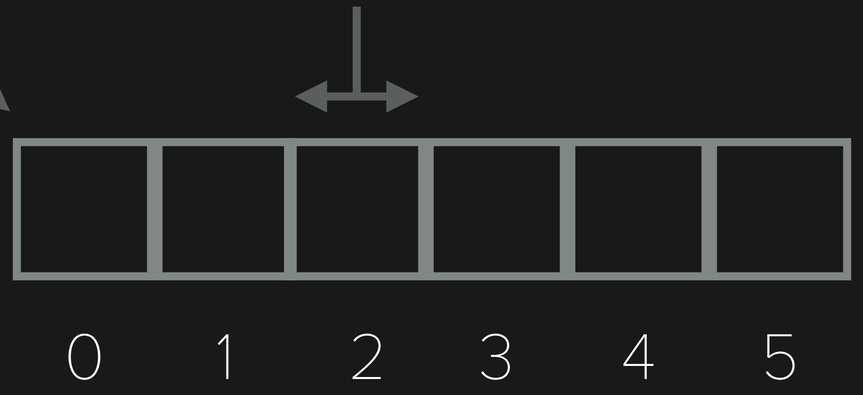
Dynamic - New memory allocated, array copied to grow

Address

`A[0] = 2000`

Size

`s = 16`



Equation to find memory location for index 4?

Address

`A[0] = 2000`

Size

`s = 16`

$$A[i] = A[0] + s * i$$

$$A[4] = 2000 + 16 * 4$$

$$A[4] = 2064$$

ARRAY RUNTIME

Access Element via Index

O(1)

Insert or Delete Element (Beginning, Mid)

O(n)

Insert or Delete Element (End)

O(1)

MAKE SCHOOL

LINKED LISTS

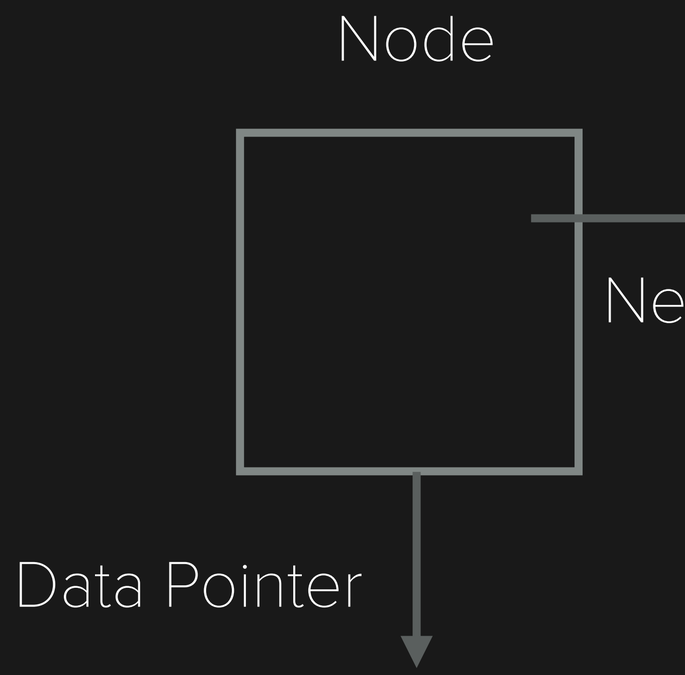
Not contiguous piece of memory

Differing size storage space at each index

Dynamic - New (small) piece of memory allocated

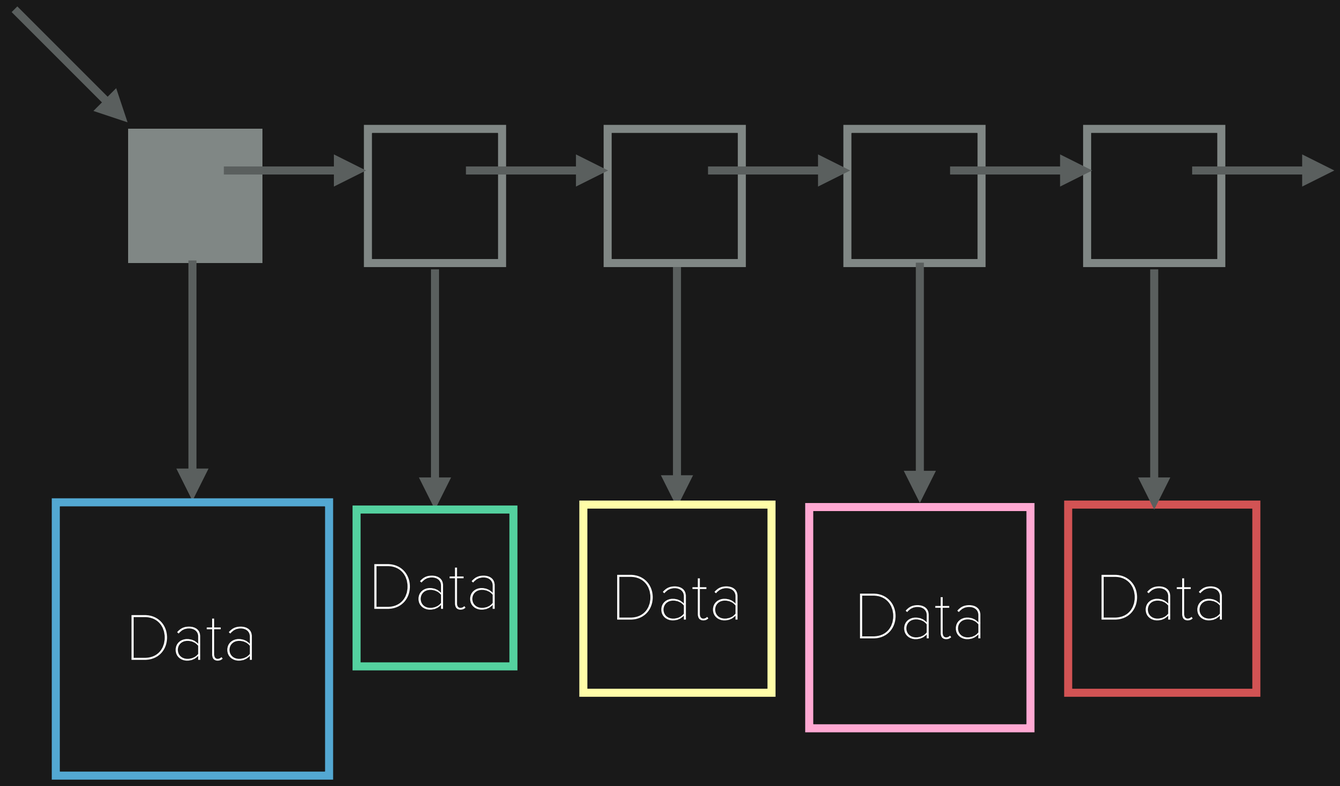
No need to copy the whole thing like an array

LINKED LISTS



MAKE SCHOOL

LINKED LISTS



LINKED LIST RUNTIME

Access Element via Index

O(n)

Insert or Delete Element (Beginning)

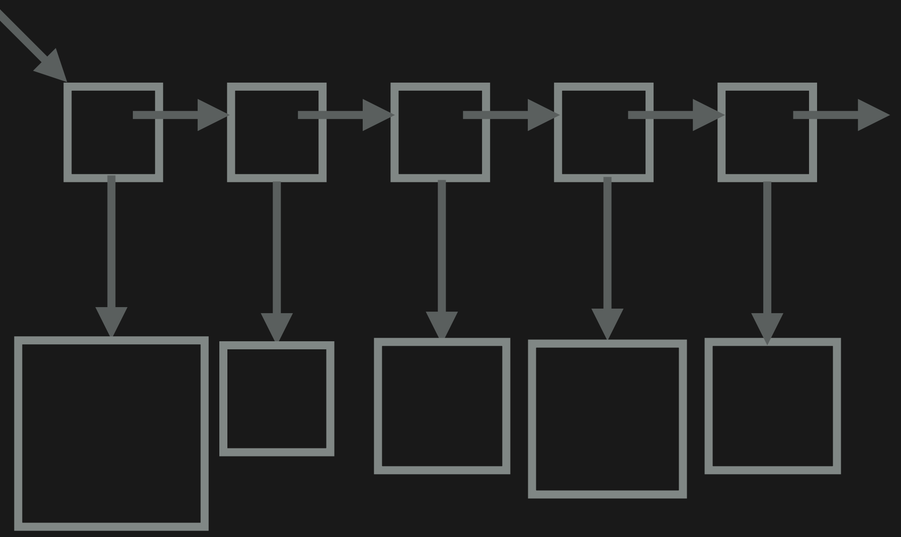
O(1)

Insert or Delete Element (Middle)

O(n)

Insert or Delete Element (End)

O(n)



MAKE SCHOOL

A LINKED LIST IS LIKE A FREIGHT TRAIN