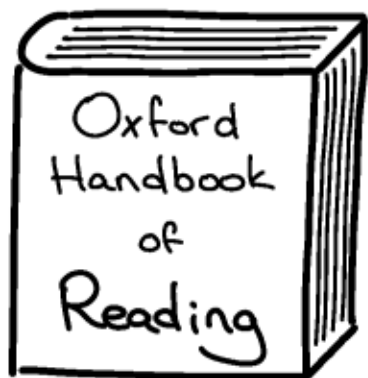


3) We don't have theories for reading code

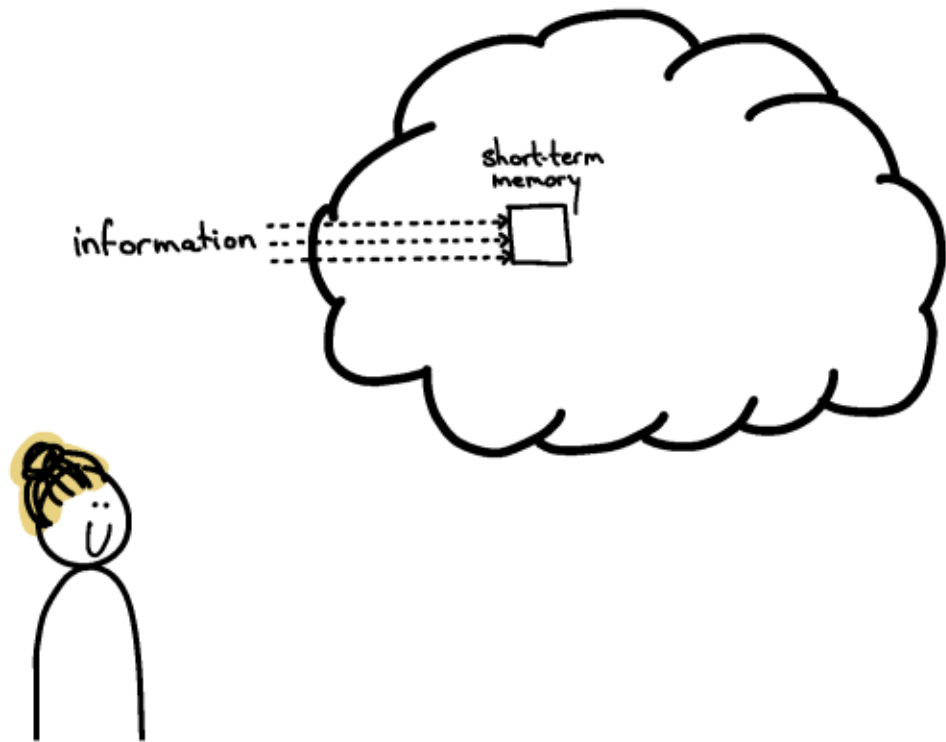


What happens in your
brain when you read code?



What happens in your
brain when you read?







I am George Miller

1950

Short-term memory
is very small!





Short-term memory
is very small!

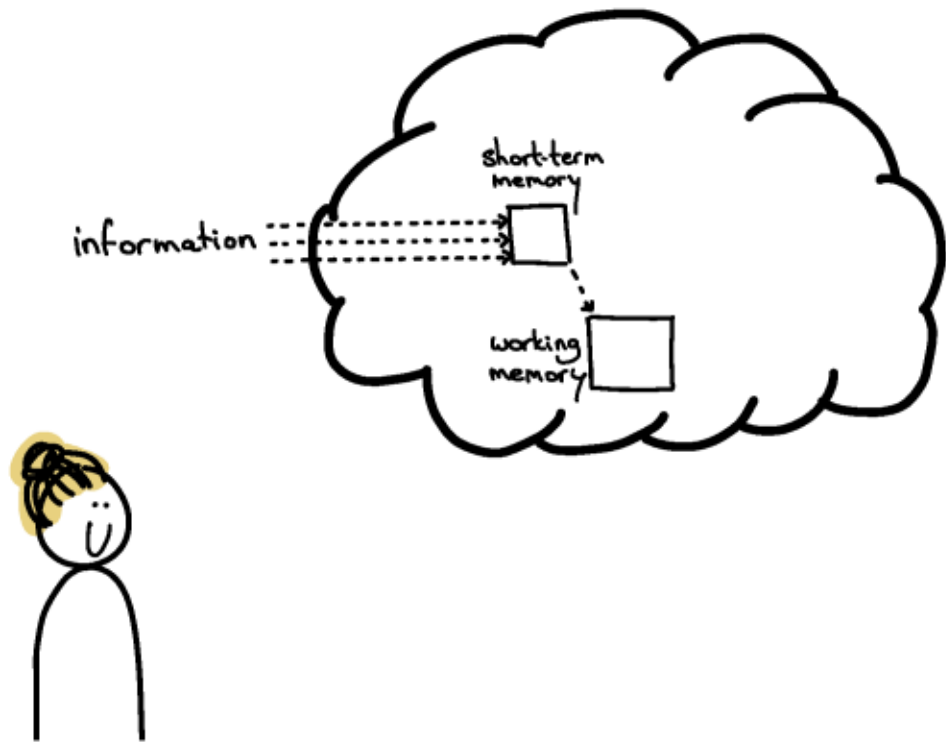
It can hold between
5 and 9 elements.

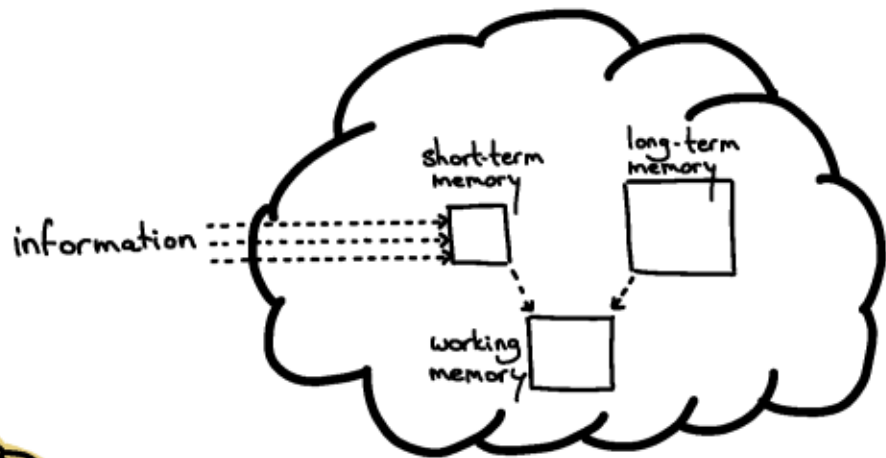




$\odot/z \quad \diamondsetminus C < \diamondset \quad \downarrow/z \quad \supset$









abk mrtpi gbar





cat loves cake





cat loves cake

Retrieved from
long-term memory



cat loves cake



What happens in your
brain when you read code?



Different forms of confusion

Let's look at
three programs



Different forms of confusion

1) APL

2 2 2 2 2 T n

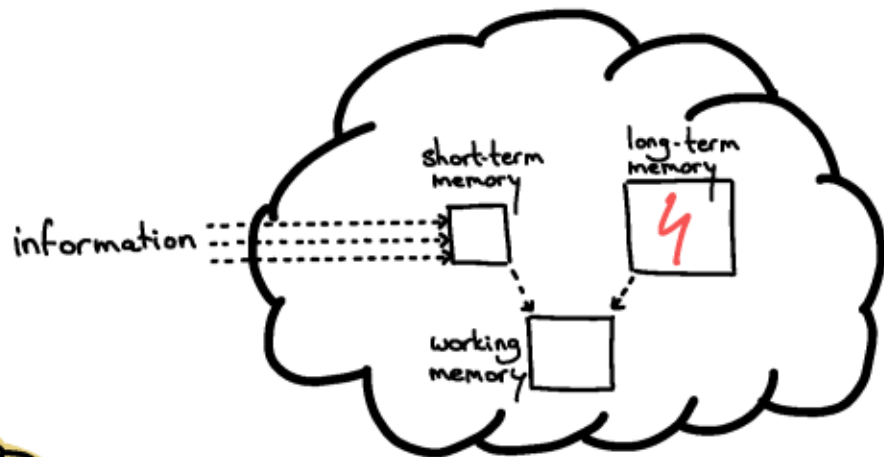


Different forms of confusion

1) APL

2 2 2 2 2 T n





Different forms of confusion

2) Java

```
public class BinaryCalculator {  
    public static void main(Int n) {  
        System.out.println(Integer.toBinaryString(n));  
    }  
}
```

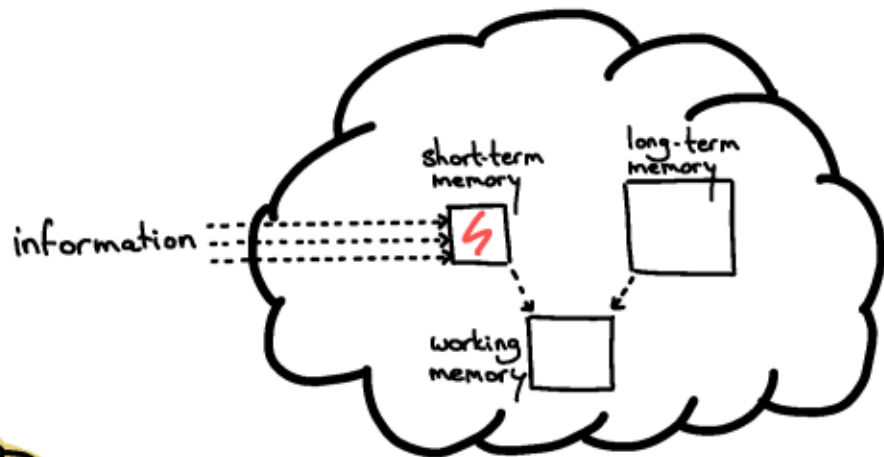


Different forms of confusion

2) Java

```
public class BinaryCalculator {  
    public static void main(Int n) {  
        System.out.println(Integer.toBinaryString(n));  
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```





Different forms of confusion

3) BASIC

```
1 LET N2 = ABS (INT (N))
2 LET B$ = ""
3 FOR N1 = N2 TO 0 STEP 0
4     LET N2 = INT (N1 / 2)
5     LET B$ = STR$ (N1 - N2 * 2) + B$
6     LET N1 = N2
7 NEXT N1
8 PRINT B$
9 RETURN
```



Different forms of confusion

3) BASIC

```
1 LET N2 = ABS (INT (N))
2 LET B$ = ""
3 FOR N1 = N2 TO 0 STEP 0
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5     LET B$ = STR$ (N1 - N2 * 2) + B$
6     LET N1 = N2
7 NEXT N1
8 PRINT B$
9 RETURN
```

Handwritten annotations: A wavy arrow points from the `INT (N)` in line 1 to a handwritten `7`. A straight arrow points from the `STEP 0` in line 3 to a handwritten `3`. The final output string is `"0"`.



