

# Performance anxiety

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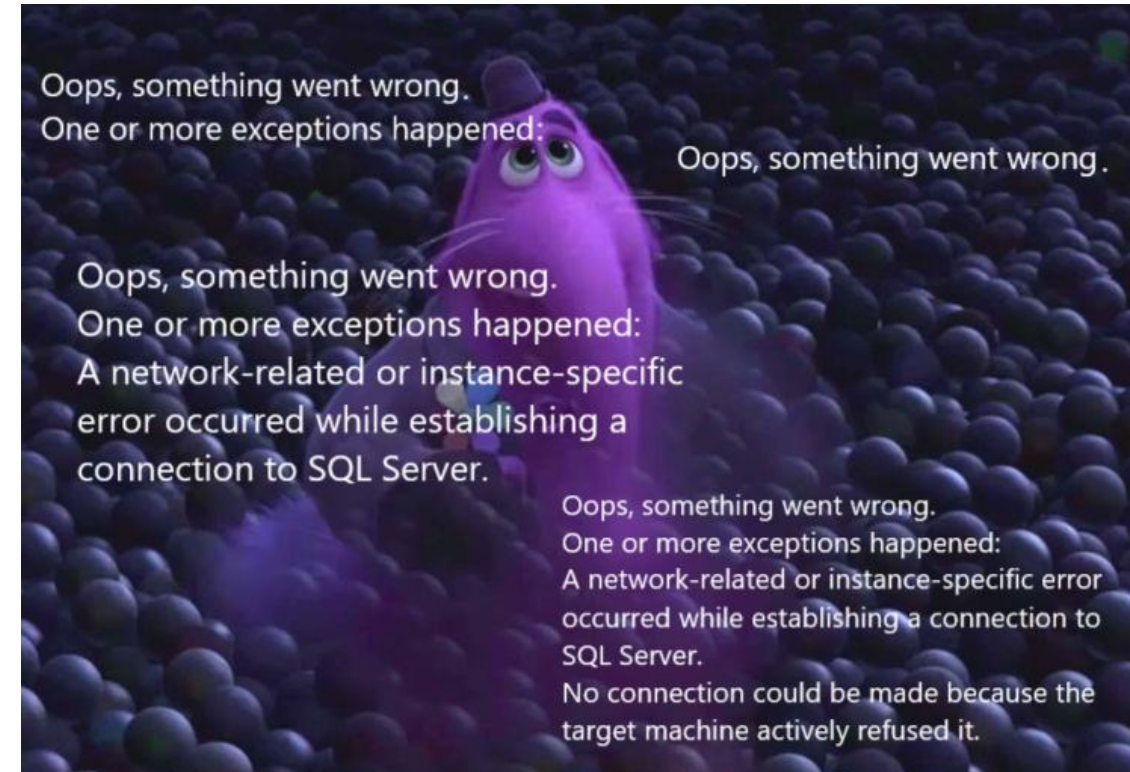
or something, I didn't think the title through

# ‘Appending’ to a string



```
try
{
}
catch (Exception ex)
{
    string log = "Oops, something went wrong. /n";
    log += "One or more exceptions happened: /n";
    log += ex.Message;
    if (ex.InnerException != null) log += "/n" + ex.InnerException.Message;
}
```

- Interpolation strings
- StringBuilder, maybe?
- Interpolation handlers?



.NET List is  
not a list

```
List<int> list = new List<int>();  
for (int i = 0; i < 10; i++)  
{  
    list.Add(i);  
}
```



```
List<int> list = new List<int>();  
for (int i = 0; i < 10; i++)  
{  
    list.Add(i);  
    Console.WriteLine($"{list.Count} {list.Capacity}");  
}
```

1	4
2	4
3	4
4	4
5	8
6	8
7	8
8	8
9	16
10	16





# Also relevant for DB calls

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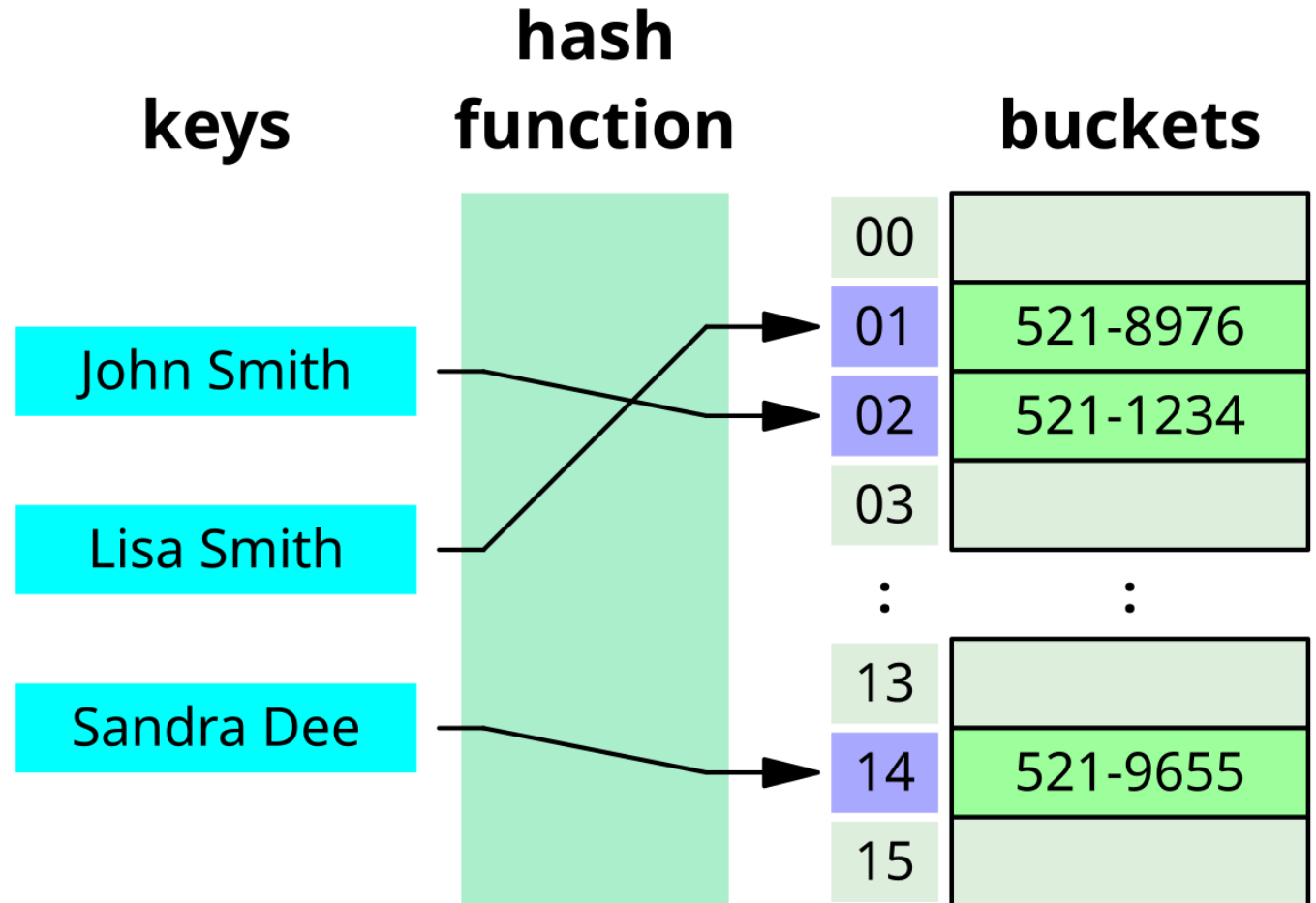
- .ToList() will do the same thing
- Estimation queries, maybe
- Cut off the results?



# (sort of) the same thing with Dictionary

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- Internal hash table (not Hashtable) and buckets
- Resizing the hash table after a threshold





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Dictionaries have  
capacities too





# Garbage collector and why generations matter

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- Objects start at Gen 0
- 'Promoted' when survived a collection
- Up to Gen 2



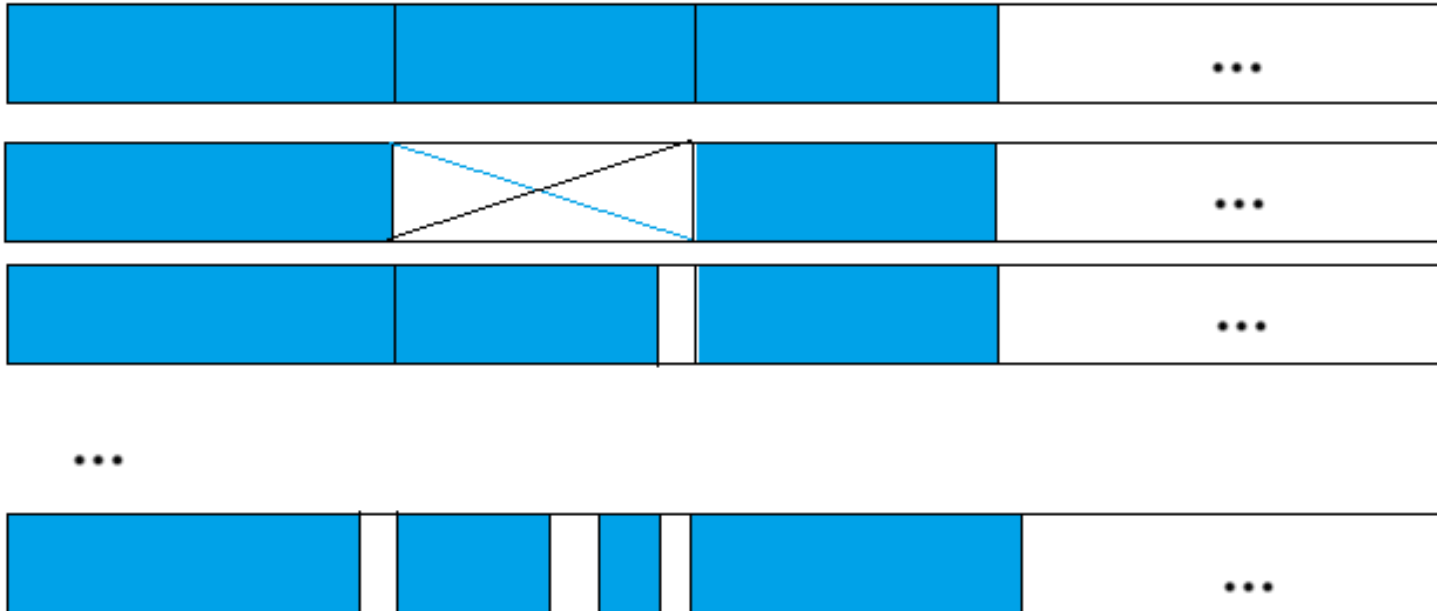




# Large Object Heap

Some objects are more  
equal than others

# Fragmentation



# Exception onion

```
void DoTheThing()
{
    try
    {
        // Do the thing
        DoAnotherThing();
    }
    catch (Exception ex)
    {
        // Or log, or whatever
        Console.WriteLine(ex.ToString());
        throw;
    }
}
```

1 reference

```
void DoAnotherThing()
{
    try
    {
        int zero = 0;
        int error = 0 / zero;
    }
    catch (Exception ex)
    {
        Console.WriteLine(ex.ToString());
        throw;
    }
}

try
{
    DoTheThing();
}
catch (Exception ex)
{
    Console.WriteLine(ex.ToString());
}
```



# Honorary mentions (as in, doesn't really happen)

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- Boxing/unboxing
- Structs
- More immutable types
- Hash collisions
- Multidimensional arrays

# Profilers

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are just wonderful and show you exactly where the problem is, nothing ever goes wrong with them





# Profilers

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- Release build
  - Stack traces are a lie!
- 'Real' data
- Not on your dev laptop
- GC interference
- Blissfully ignorant of IO
- And other JIT





A rear view of a yellow convertible driving on a desert road at sunset. The car is in the center, moving away from the viewer. The road is a light-colored dirt or gravel path that curves into the distance. The landscape is arid, with low-lying shrubs and cacti. The sky is a warm, golden-orange color, suggesting the sun is low on the horizon. The overall mood is peaceful and scenic.

Thank you!

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