

Buggy C# Code Examples and Fixes - Interview Cheat Sheet

1. Division by Zero

Buggy Code:

```
int a = 10;
int b = 0;
int result = a / b;
Console.WriteLine(result);
```

Fix:

```
if (b != 0)
{
    int result = a / b;
    Console.WriteLine(result);
}
else
{
    Console.WriteLine("Cannot divide by zero.");
}
```

2. NullReferenceException

Buggy Code:

```
string name = null;
Console.WriteLine("Length: " + name.Length);
```

Fix:

```
if (!string.IsNullOrEmpty(name))
    Console.WriteLine("Length: " + name.Length);
else
    Console.WriteLine("Name is null or empty.");
```

3. Modifying Collection During Iteration

Buggy Code:

```
List<int> nums = new List<int> { 1, 2, 3, 4 };
foreach (int n in nums)
{
    if (n % 2 == 0)
        nums.Remove(n);
}
```

Fix Option 1:

```
nums.RemoveAll(n => n % 2 == 0);
```

Fix Option 2:

```
for (int i = nums.Count - 1; i >= 0; i--)
{
    if (nums[i] % 2 == 0)
        nums.RemoveAt(i);
}
```

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4. Async Deadlock in Main

Buggy Code:

```
public static void Main()
{
    var result = GetData().Result;
    Console.WriteLine(result);
}
```

Fix:

```
public static async Task Main()
{
    var result = await GetData();
    Console.WriteLine(result);
}
```

5. Case-Sensitive String Comparison

Buggy Code:

```
string input = "yes";
if (input == "YES")
{
    Console.WriteLine("Confirmed");
}
```

Fix:

```
if (string.Equals(input, "YES", StringComparison.OrdinalIgnoreCase))
{
    Console.WriteLine("Confirmed");
}
```

6. Object Equality Using ==

Buggy Code:

```
object a = "hello";
object b = new string("hello".ToCharArray());

if (a == b)
    Console.WriteLine("Equal");
else
    Console.WriteLine("Not Equal");
```

Fix:

```
if (a.Equals(b))
    Console.WriteLine("Equal");
```

7. Infinite Recursion (Stack Overflow)

Buggy Code:

```
void Print(int x)
{
```

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```
    Console.WriteLine(x);  
    Print(x + 1);  
}  
Print(1);
```

Fix:

```
void Print(int x)  
{  
    if (x > 1000) return;  
    Console.WriteLine(x);  
    Print(x + 1);  
}
```