**[LINQ Single vs SingleOrDefault vs First vs FirstOrDefault](http://www.technicaloverload.com/linq-single-vs-singleordefault-vs-first-vs-firstordefault/" \o "Permanent Link to LINQ Single vs SingleOrDefault vs First vs FirstOrDefault)**

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| --- | --- | --- | --- | --- |
|  | **Single()** | **SingleOrDefault()** | **First()** | **FirstOrDefault()** |
| **Description** | Returns a single, specific element of a sequence | Returns a single, specific element of a sequence, or a default value if that element is not found | Returns the first element of a sequence | Returns the first element of a sequence, or a default value if no element is found |
| **Exception thrown when** | There are 0 or more than 1 elements in the result | There is more than one element in the result | There are no elements in the result | Only if the source is null (they all do this) |
| **When to use** | If exactly 1 element is expected; not 0 or more than 1 | When 0 or 1 elements are expected | When more than 1 element is expected and you want only the first | When more than 1 element is expected and you want only the first. Also it is ok for the result to be empty |

**Examples**

First we create an Employee table for querying. We will test with three difference scenarios:

* Employeeid = 1: Only one employee with this ID
* Firstname = Robert: More than one employee with this name
* Employeeid = 10: No employee with this ID

|  |  |  |  |
| --- | --- | --- | --- |
| **Employeeid** | **Lastname** | **Firstname** | **Birthdate** |
| 1 | Davolio | Nancy | 12/8/1948 12:00:00 AM |
| 2 | Fuller | Andrew | 2/19/1952 12:00:00 AM |
| 3 | Leverling | Janet | 8/30/1963 12:00:00 AM |
| 4 | Peacock | Margaret | 9/19/1937 12:00:00 AM |
| 5 | Buchanan | **Robert** | 3/4/1955 12:00:00 AM |
| 6 | Suyama | Michael | 7/2/1963 12:00:00 AM |
| 7 | King | **Robert** | 5/29/1960 12:00:00 AM |
| 8 | Callahan | Laura | 1/9/1958 12:00:00 AM |
| 9 | Dodsworth | Anne | 1/27/1966 12:00:00 AM |

**Single()**

|  |  |  |
| --- | --- | --- |
| **Statement** | |  | | --- | | Employee.Single(e => e.Employeeid == 1) | |
| **Expected Result** | There is only one record where Employeeid == 1. Should return this record. |
| **Actual Result** | |  |  | | --- | --- | | **Employeeid** | 1 | | **Lastname** | Davolio | | **Firstname** | Nancy | | **Birthdate** | 12/8/1948 12:00:00 AM | |

|  |  |  |
| --- | --- | --- |
| **Statement** | |  | | --- | | Employee.Single(e => e.Firstname == "Robert") | |
| **Expected Result** | There are multiple records where Firstname == Robert. Should fail. |
| **Actual Result** | InvalidOperationException: Sequence contains more than one element |

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| --- | --- | --- |
| **Statement** | |  | | --- | | Employee.Single(e => e.Employeeid == 10) | |
| **Expected Result** | There is no record with Employeeid == 10. Should fail. |
| **Actual Result** | InvalidOperationException: Sequence contains no elements |

**SingleOrDefault()**

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| --- | --- | --- |
| **Statement** | |  | | --- | | Employee.SingleOrDefault(e => e.Employeeid == 1) | |
| **Expected Result** | There is only one record where Employeeid == 1. Should return this record. |
| **Actual Result** | |  |  | | --- | --- | | **Employeeid** | 1 | | **Lastname** | Davolio | | **Firstname** | Nancy | | **Birthdate** | 12/8/1948 12:00:00 AM | |

|  |  |  |
| --- | --- | --- |
| **Statement** | |  | | --- | | Employee.SingleOrDefault(e => e.Firstname == "Robert") | |
| **Expected Result** | There are multiple records where Firstname == Robert. Should fail. |
| **Actual Result** | InvalidOperationException: Sequence contains more than one element |

|  |  |  |
| --- | --- | --- |
| **Statement** | |  | | --- | | Employee.SingleOrDefault(e => e.Employeeid == 10) | |
| **Expected Result** | There is no record with Employeeid = 10. Should return default value. |
| **Actual Result** | null |

**First()**

|  |  |  |
| --- | --- | --- |
| **Statement** | |  | | --- | | Employee.OrderBy(e => e. Birthdate)  .First(e => e.Firstname == "Robert") | |
| **Expected Result** | There are multiple records where Firstname == Robert. Should return the oldest one. |
| **Actual Result** | |  |  | | --- | --- | | **Employeeid** | 5 | | **Lastname** | Buchanan | | **Firstname** | Robert | | **Birthdate** | 3/4/1955 12:00:00 AM | |

|  |  |  |
| --- | --- | --- |
| **Statement** | |  | | --- | | Employee.OrderBy(e => e. Birthdate)  .First(e => e.Employeeid == 10) | |
| **Expected Result** | There is no record with Employeeid = 10. Should fail. |
| **Actual Result** | InvalidOperationException: Sequence contains no elements |

**FirstOrDefault()**

|  |  |  |
| --- | --- | --- |
| **Statement** | |  | | --- | | Employee.OrderBy(e => e. Birthdate)  .FirstOrDefault(e => e.Firstname == "Robert") | |
| **Expected Result** | There are multiple records where Firstname == Robert. Should return the oldest one. |
| **Actual Result** | |  |  | | --- | --- | | **Employeeid** | 5 | | **Lastname** | Buchanan | | **Firstname** | Robert | | **Birthdate** | 3/4/1955 12:00:00 AM | |

|  |  |  |
| --- | --- | --- |
| **Statement** | |  | | --- | | Employee.OrderBy(e => e. Birthdate)  .FirstOrDefault(e => e.Employeeid == 10) | |
| **Expected Result** | There is no record with Employeeid = 10. Should return default value. |
| **Actual Result** | null |