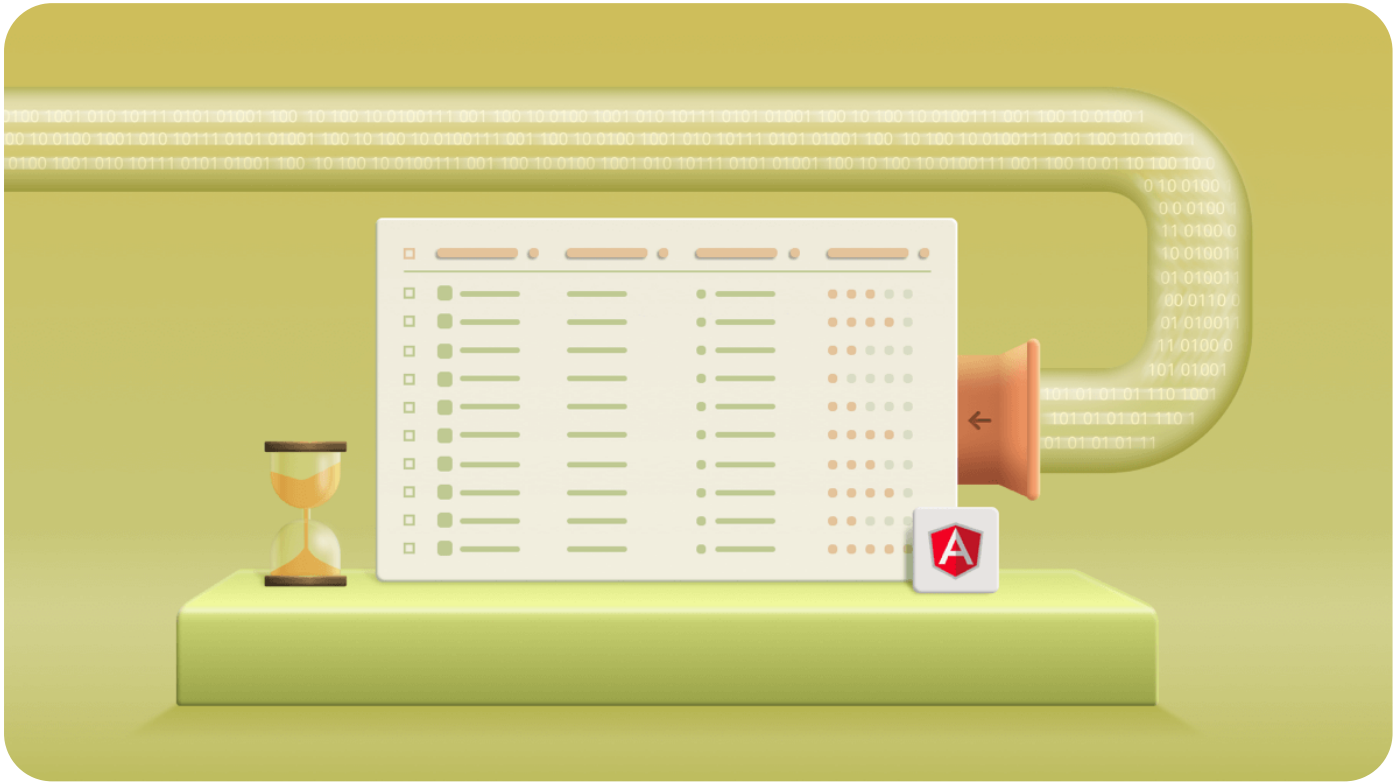
How to Load a Million+ Records in Less Than a Second in Syncfusion Angular Data Grid

Hariharan • 9 min read • Jan 1, 2024 • Updated • 8 Comments



Syncfusion Angular Data Grid is used to display data in a tabular format. Its rich functionalities include data binding, editing, Excel-like filtering, custom sorting, grouping, row reordering, freezing rows and columns, aggregating rows, and exporting to Excel, CSV, and PDF formats.

In this blog post, we are going to discuss how to load more than a million records in less than a second in Syncfusion Angular Data Grid.

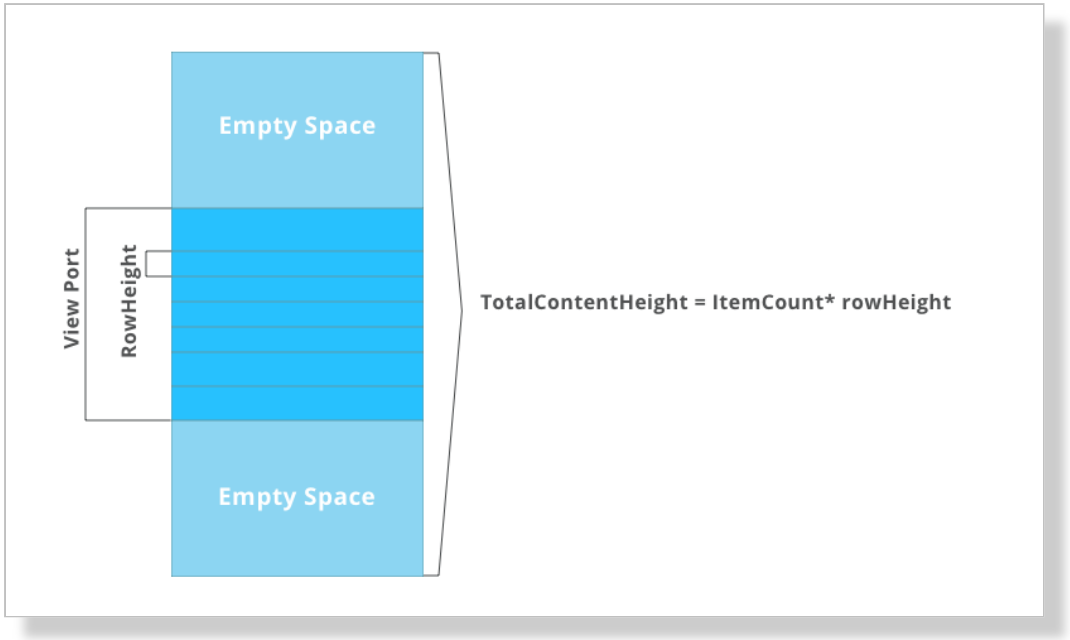
Let’s get started!

What is virtual scrolling and why do we need it?

Consider, you have more than a million records, and you want to display them in a scrollable grid and not in pages. Loading millions of records will take a lot of time in any browser, which will result in deterioration in performance. It will also pollute the DOM (Document Object Model) and consume a lot of memory.

With virtual scrolling, instead of rendering all the data at a time, you can render a subset of the data that fits on the screen (plus a small buffer). All the other data can be shown through top and bottom padding elements. These elements are

empty spaces but have some height, which is calculated from the items count and row node height. This is necessary to provide consistent scrollbar parameters. So, when the user navigates, a new subset of items is calculated and the content is rebuilt, the old is hidden, and the padding elements are recalculated.



Steps to load millions of records in Angular Data Grid

Step 1: Set up Angular environment.

Use the Angular CLI to set up your Angular environment. To install the Angular CLI, use the following command.

```
npm install -g @angular/cli
```

Step 2: Create an Angular application.

Create a new Angular application using the following Angular CLI command.

```
ng new my-app
cd my-app
```

Step 3: Add the Syncfusion grids package.

All the Essential JS 2 NuGet packages are available in the npmjs.com registry.

To install the Data Grid component, use the following command.

```
npm install @syncfusion/ej2-angular-grids --save
```

The **—save** will instruct the NPM to include the grids package inside of the **dependencies** section of the **package.json**.

Step 4: Register Grid module.

Import the Grid module into the Angular application (app.module.ts) from the package **@syncfusion/ej2-angular-grids [src/app/app.module.ts]**.

Refer to the following code.

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```
import { NgModule } from '@angular/core';
import { BrowserModule } from '@angular/platform-browser';
// import the GridModule for the Grid component
import { GridModule } from '@syncfusion/ej2-angular-grids';
import { AppComponent }  from './app.component';

@NgModule({
  //declaration of ej2-angular-grids module into NgModule
  imports:      [ BrowserModule, GridModule ],
  declarations: [ AppComponent ],
  bootstrap:    [ AppComponent ]
```

```
})
export class AppModule { }
```

Step 5: Add CSS reference.

The following CSS files are available in the **../node_modules/@syncfusion** package folder. Add the reference to these CSS files in **styles.css[src/styles.css]** using the following code.

Copy

```
@import '../node_modules/@syncfusion/ej2-base/styles/material.css';
@import '../node_modules/@syncfusion/ej2-buttons/styles/material.css';
@import '../node_modules/@syncfusion/ej2-calendars/styles/material.css';
@import '../node_modules/@syncfusion/ej2-dropdowns/styles/material.css';
@import '../node_modules/@syncfusion/ej2-inputs/styles/material.css';
@import '../node_modules/@syncfusion/ej2-navigations/styles/material.css';
@import '../node_modules/@syncfusion/ej2-popups/styles/material.css';
@import '../node_modules/@syncfusion/ej2-splitbuttons/styles/material.css';
@import '../node_modules/@syncfusion/ej2-angular-grids/styles/material.css';
```

Step 6: Add the Data Grid component

Modify the template in the [**src/app/app.component.html**] file to render the grid component. Add the Angular Data Grid by using the **<ejs-grid>** selector and button

element to load the data.

Refer to the following code.

Copy

```
<div class='div-button'>
  <button (click)='onClick($event)'>Load 1 Million Data</button>
  <span id="performanceTime">Time Taken: 0 ms</span>
</div>
<ejs-grid #grid [dataSource]='vData' [enableVirtualization]='true' [enableColumn
  <e-columns>
      <e-column field='FIELD1' headerText='Player Name' width='120'></e-column>
      <e-column field='FIELD2' headerText='Year' width='100'></e-column>
      <e-column field='FIELD3' headerText='Stint' width='120'></e-column>
      <e-column field='FIELD4' headerText='TMID' width='120'></e-column>
      <e-column field='FIELD5' headerText='LGID' width='120'></e-column>
      <e-column field='FIELD6' headerText='GP' width='120'></e-column>
      <e-column field='FIELD7' headerText='GS' width='120'></e-column>
      <e-column field='FIELD8' headerText='Minutes' width='120'></e-column>
      <e-column field='FIELD9' headerText='Points' width='130'></e-column>
      <e-column field='FIELD10' headerText='OREB' width='130'></e-column>
      <e-column field='FIELD11' headerText='DREB' width='130'></e-column>
      <e-column field='FIELD12' headerText='REB' width='130'></e-column>
      <e-column field='FIELD13' headerText='Assists' width='130'></e-column>
      <e-column field='FIELD14' headerText='Steals' width='120'></e-column>
      <e-column field='FIELD15' headerText='Blocks' width='120'></e-column>
      <e-column field='FIELD16' headerText='Turnovers' width='140'></e-column>
      <e-column field='FIELD17' headerText='PF' width='100'></e-column>
      <e-column field='FIELD18' headerText='FGA' width='150'></e-column>
      <e-column field='FIELD19' headerText='FGM' width='120'></e-column>
```

```
        <e-column field='FIELD20' headerText='FTA' width='150'></e-column>
        <e-column field='FIELD21' headerText='FTM' width='120'></e-column>
        <e-column field='FIELD22' headerText='Three Attempted' width='170'></e-col
        <e-column field='FIELD23' headerText='Three Made' width='140'></e-column>
        <e-column field='FIELD24' headerText='Post GP' width='120'></e-column>
        <e-column field='FIELD25' headerText='Post GS' width='120'></e-column>
        <e-column field='FIELD26' headerText='Post Minutes' width='150'></e-column
        <e-column field='FIELD27' headerText='Post Points' width='120'></e-column>
        <e-column field='FIELD28' headerText='Post OREB' width='150'></e-column>
        <e-column field='FIELD29' headerText='Post DREB' width='150'></e-column>
        <e-column field='FIELD30' headerText='Post REB' width='150'></e-column>
    </e-columns>
</ejs-grid>
```

In the previous grid settings, we have enabled the row and column virtualizations to virtualize data in vertical and horizontal scrolling using the **enableVirtualization** and **enableColumnVirtualization** properties.

> **Note:** To set up the row virtualization, you need to set the content height using the height property.

Step 7: Bind 1 million generated data points to Data Grid.

In the button click event, we have generated 1 million data points from the **data.ts** file, which uses loop, and then bound this data to the data grid using the

dataSource property. Once data is bound to the grid, the dataBound event will be invoked.

Refer to the following code.

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```
import { Component, OnInit, ViewEncapsulation, ViewChild } from '@angular/core';
import { GridComponent } from '@syncfusion/ej2-angular-grids';
import { datasource, virtualData } from './data';
@Component({
  selector: 'app-root',
  templateUrl: './app.component.html',
  styleUrls: ['./app.component.css']
})
export class AppComponent implements OnInit {
  public vData: Object[] = virtualData;
    @ViewChild('grid')
    public grid: GridComponent;
    public date1: number;
    public date2: number;
    public flag: boolean = true;
    public ngOnInit(): void { }

    onClick = (args: any) => {
        if (!this.vData.length) {
             datasource();
            this.grid.dataSource = this.vData;
        }
        this.flag = true;
```

```
            this.date1 = new Date().getTime();
            this.grid.refresh();
        }
        dataBound(): void {
            if (this.flag && this.date1) {
                this.date2 = new Date().getTime();
                document.getElementById('performanceTime').innerHTML = 'Time Taken:
                this.flag = false;
            }
        }
    }
```


Step 8: Module injection.

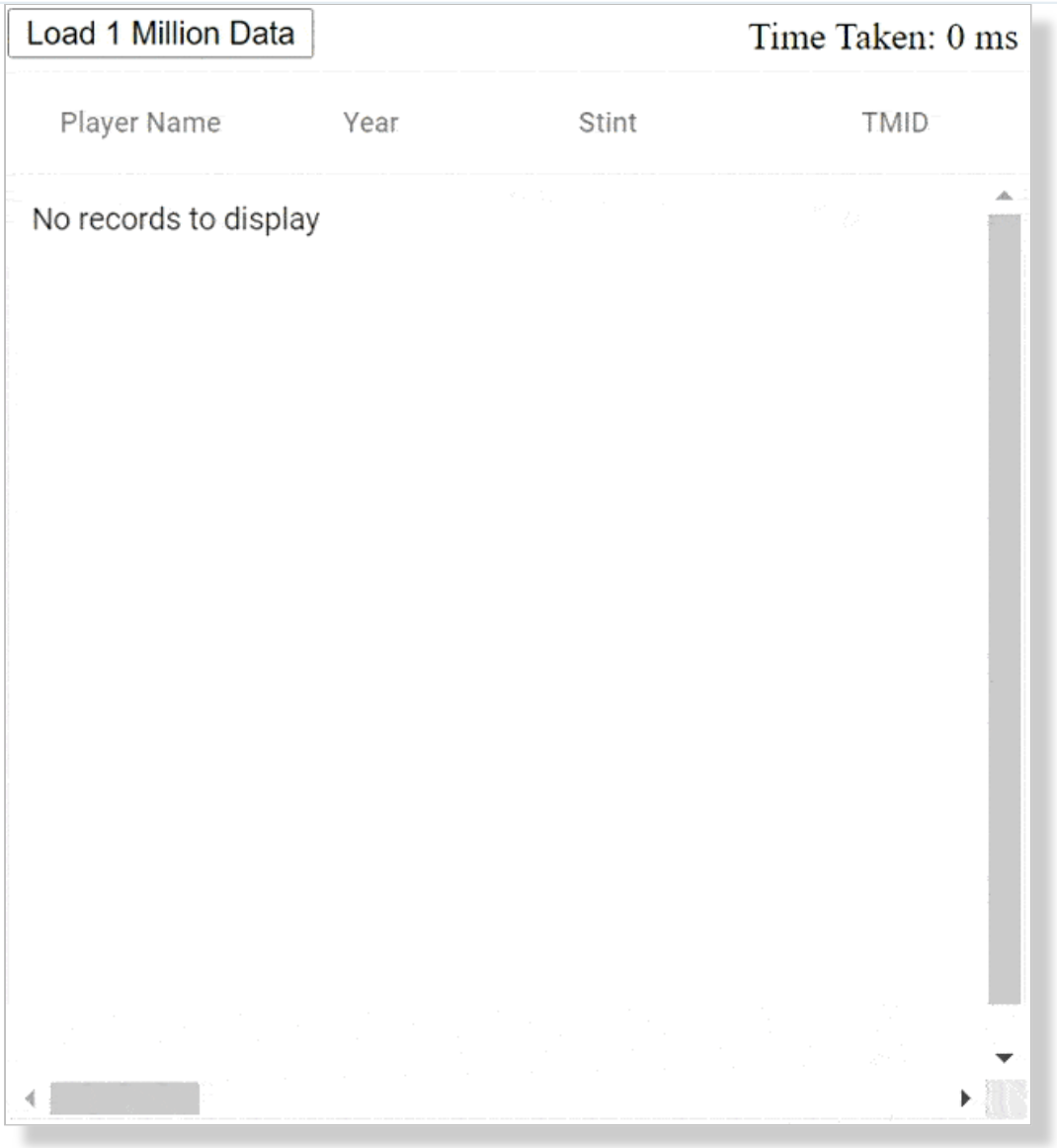
To customize the grid with some additional features, inject the required modules. Extend the grid's basic functionality with the VirtualScrollService module, a provider for using the virtual scrolling feature. This module should be injected into the provider's section of the root NgModule or component class.

Step 9: Run the application

Use the following command to run the application in the browser.

```
ng serve –open
```

The output will appear as shown in the following .gif image.



GitHub reference: You can check out our project samples in this GitHub repository.

Conclusion

In this blog, we have seen how easy it is to load millions of data points in less than a second without any performance lag in the Syncfusion Angular Data Grid. This feature will reduce the loading time and memory space required. The DataGrid control is available in our Syncfusion ASP .NET (Core, MVC, Web Forms), Blazor, JavaScript, React, Vue, Flutter, Xamarin, UWP, WinForms, and WPF platforms, too.

So, feel free to try them out and share your feedback or questions in the comments section below.

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MEET THE AUTHOR

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Hariharan is a Product Manager at Syncfusion. He has been a web developer since 2013. He is passionate about web technology and developed the Spreadsheet and Grid component in Web.