amasty

For more details see how the Custom Reports Builder extension works.

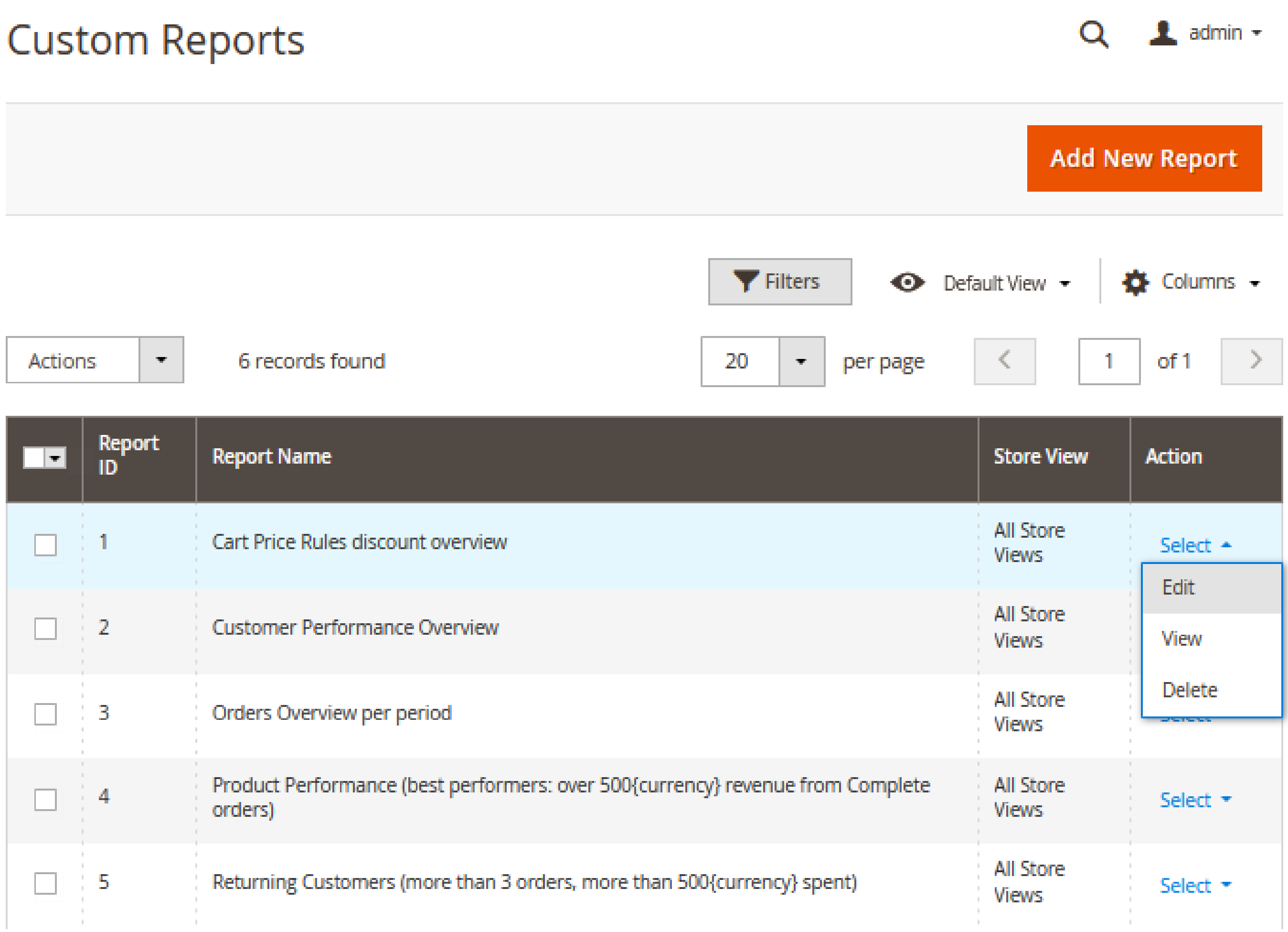
# Guide for Custom Reports Builder for Magento 2

Build an unlimited variety of custom reports based on any available store data. Analyze each aspect of your store performance and build an efficient sales strategy. Arrange all needed columns in the most convenient order. Apply filters, set the time intervals, and visualize the data with charts.

- Create an unlimited number of custom reports
- Use any available information for your reports
- Use prebuilt report templates
- Manage all reports in a convenient grid
- Visualize data with charts and apply filters

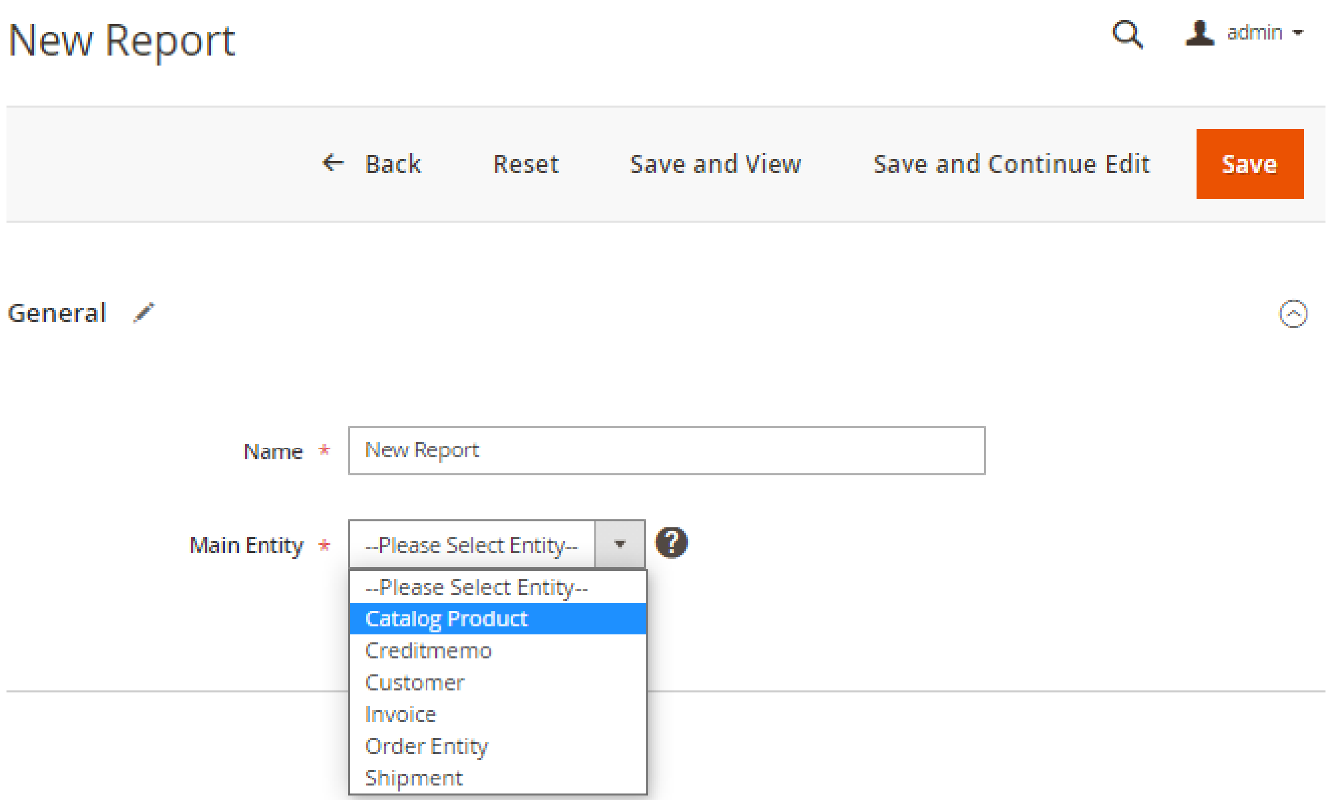
## Reports grid

When the extension is installed, please navigate to **Amasty → Custom Reports Builder → Amasty Custom Report Builder**. Here you can see the **Custom Reports** grid with the **5 prebuilt reports** that we have created for your convenience. Use these reports as they are or flexibly modify any of them according to your needs. Also, here you can create and manage your new custom reports.




## How to build a report

To create a new report, please hit the **Add New Report** button.




## 1. Choose the main entity to start report formation

**Name** - Specify the name for your new report, that will be visible in the reports grid.

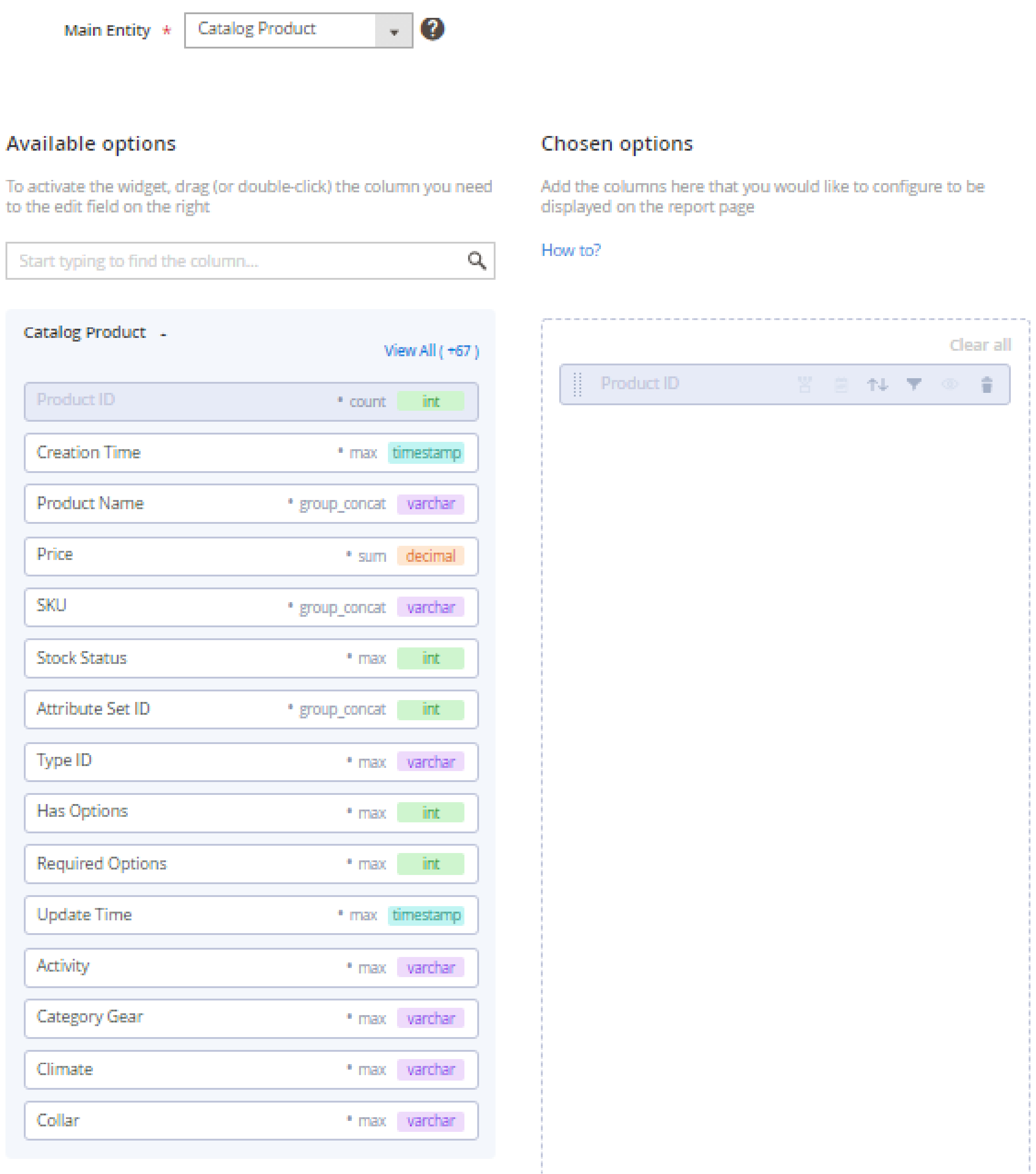
**Main Entity** - It is a core entity, on the basis of which the report data will be aggregated. For now, you may choose one of 6 main entities:

- Catalog Product
- Credit Memo
- Customer
- Invoice
- Order Entity
- Shipment

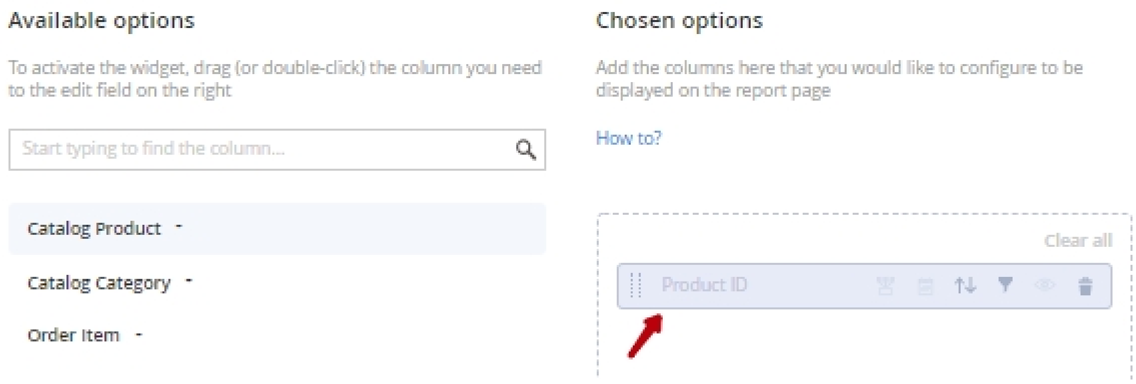
For Magento Enterprise Edition, **RMA entity** is also available. It provides store administrators with the functionality of building reports on various aspects of product return.
How to understand **what main entity should be chosen**?

Before choosing the main entity, think about the main objectives of your report. For example, if you need some product breakdown and their performance by specific criteria - you should choose the Catalog Product main entity thus building your report from the product. Or if you need to analyze particular sales aspects - you should choose the Order Entity thus building your report from the order.

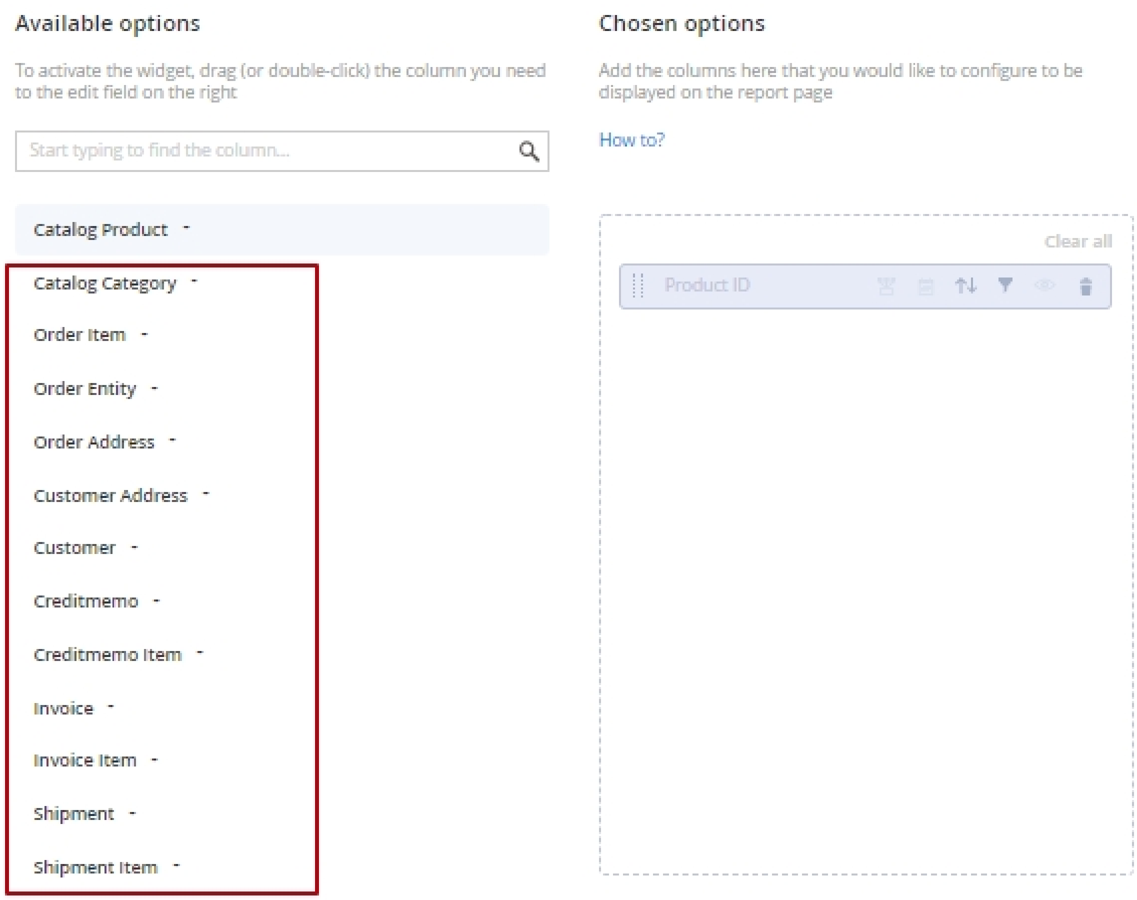
After you choose the main entity, you will see the option (column) block available for this entity. Each main entity has a specific block of options. For example, the Catalog Product entity has the following options block:




The main block of options (of the same name as the main entity) is highlighted. Also, each main entity has its own main option, which automatically appears in the right column, after you choose the main entity. The main option can't be removed from the report as it is the basic option relatively which the report is being built. But you can use time periods as the main column. Please, check the Use Periods section of this guide to know how to do it.




Also, when you choose the Main Entity, you can see that a list of Secondary Entities becomes available.




You can add the options (columns) to your report as from the Main Entity so from the Secondary ones.

The list of entities for the main entity is limited only by the fact that the requests for secondary entities are heavier. This means that the load on the server is greater, but this doesn't mean that secondary entities cannot be used as main ones. If the capacity of the server allows, or the store is not large, then the customer can make any entity he needs the main one in order to create a report on its basis.

To do this, you need to add the **primary="true"** mark to the XML file of the corresponding entity in the entity name line. The path to the entity files is as follows:

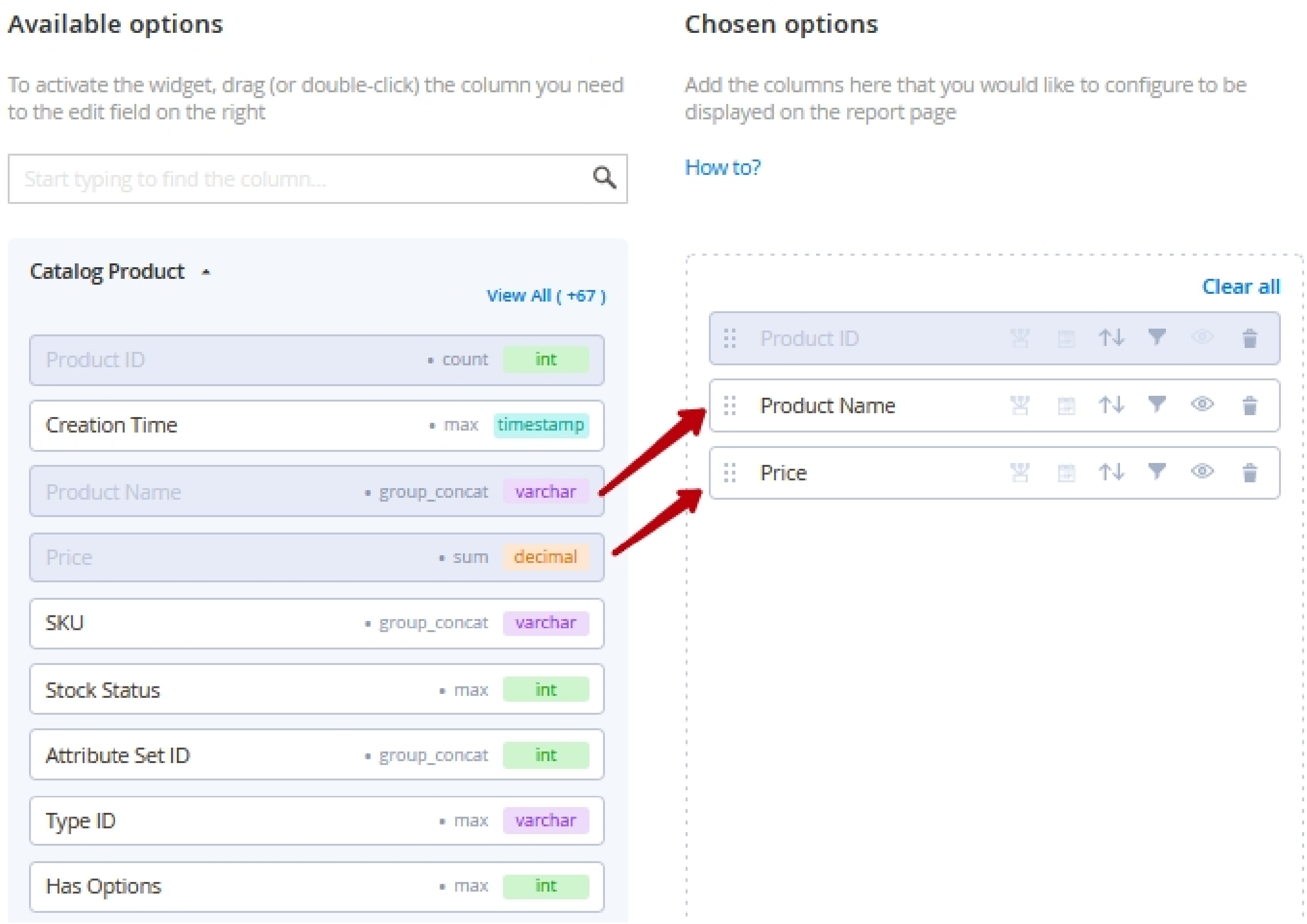
**app/code/Amasty/ReportBuilder/etc/ambuilder_entity_scheme**. Next, open the file of the entity that you want to make the main one and insert primary="true" in the entity name line.

catalog_category.xml

```xml
<?xml version="1.0"?>

<config xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="urn:amasty:module:Amasty_ReportBuilder:etc/entity_scheme.xsd">
    <amasty_report_builder_entities>
        <entity name="catalog_category" eav="true" primary="true">
            <title>Catalog Category</title>
            <main_table>catalog_category_entity</main_table>

            <columns>
                <column name="entity_id" primary="true">
                    <title>Category ID</title>
                </column>
                <column name="name" eav_attribute="true">
                    <title>Category Name</title>
                </column>
                <column name="attribute_set_id">
                    <hidden>true</hidden>
                </column>
            </columns>

            <relations>
                <relation name="catalog_product" type="table">
                    <column>entity_id</column>
                    <reference_column>entity_id</reference_column>
                    <relation_table>catalog_category_product</relation_table>
                    <relation_column>category_id</relation_column>
                    <relation_reference_column>product_id</relation_reference_column>
                    <relationship_type>many_to_many</relationship_type>
                </relation>
```

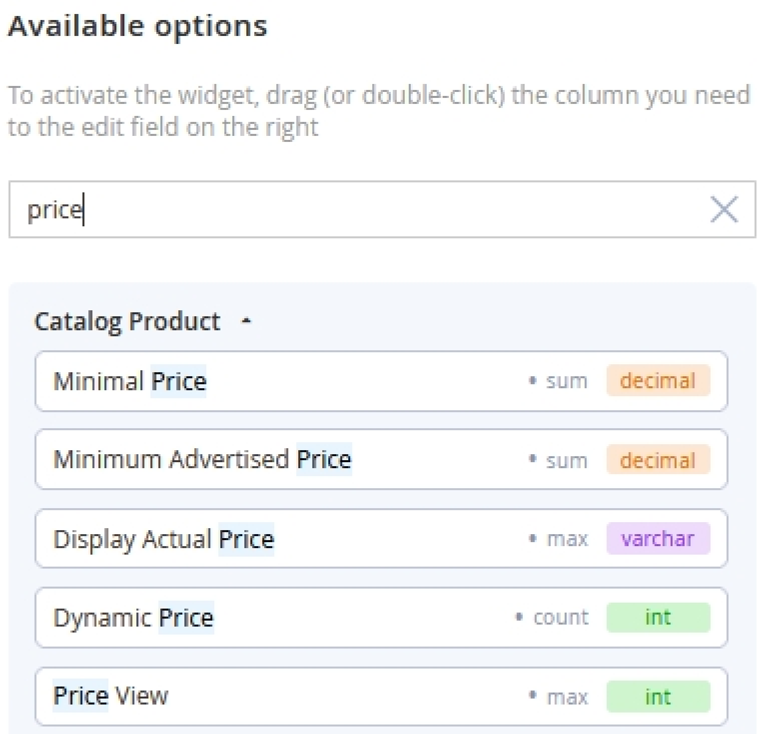
## 2. Add the required data to the report

To add any of the **Available options** to the report, just expand the options blocks and drag and drop the options from the required blocks to the **Chosen options** tab. When you drop the option to the right column, it becomes disabled at the left one.

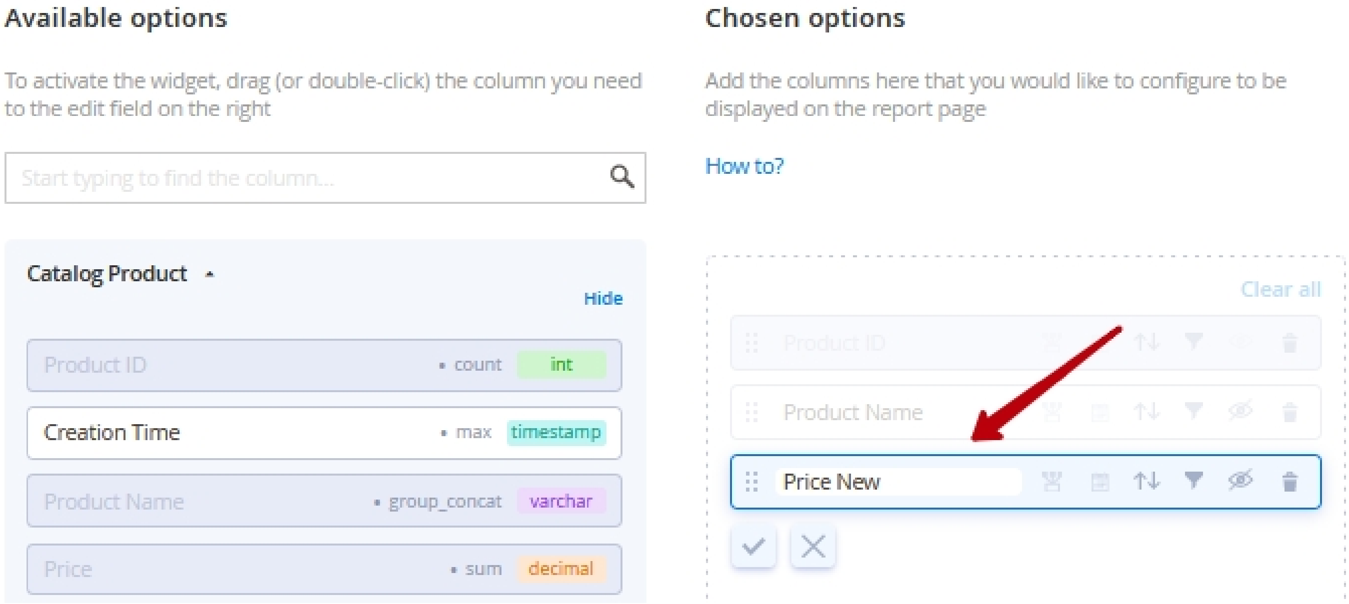



Also, you can place the needed columns to **Chosen options** section with a double click.

If you don't see the needed option, you can use the **Search Field**. Just start typing and the module will show you all the options that match your query:

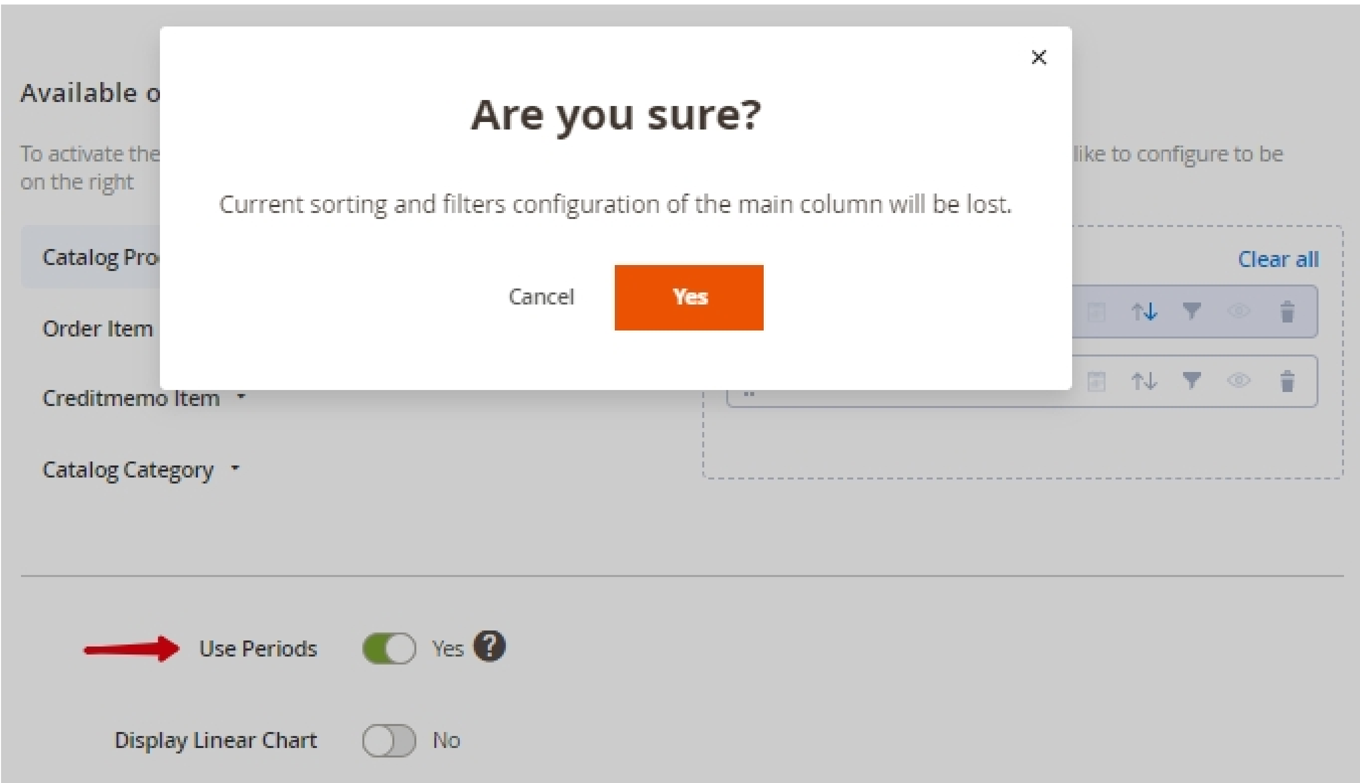


**You can set custom titles to the chosen columns** for more convenience or to avoid confusion on edit and view pages caused by the same names of entities' columns stored in the DB.

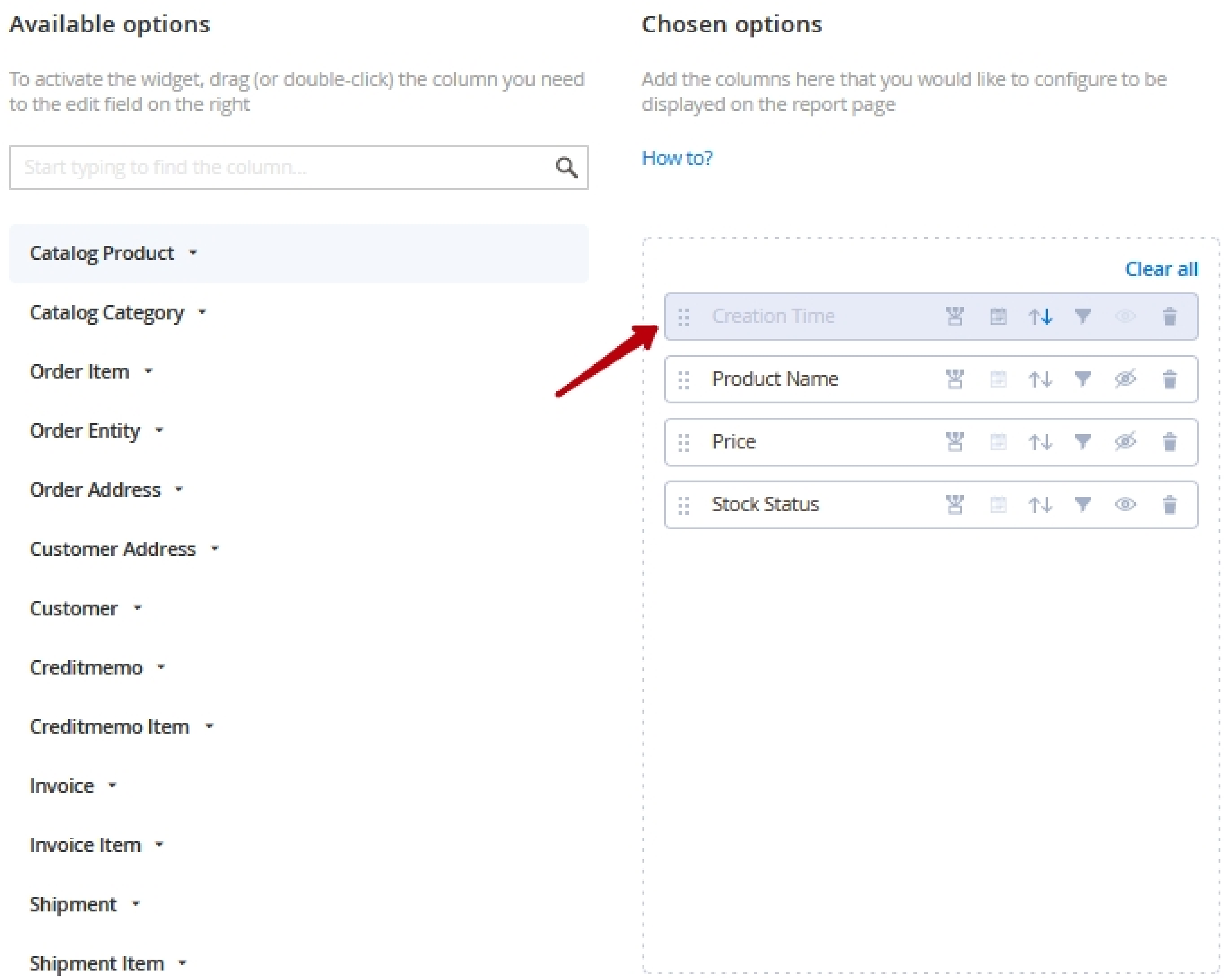



## 3. Use periods

Use periods setting lets you group several report lines into one, if this data relates to the same time period. If you turn on/off the setting, you will see the pop-up:

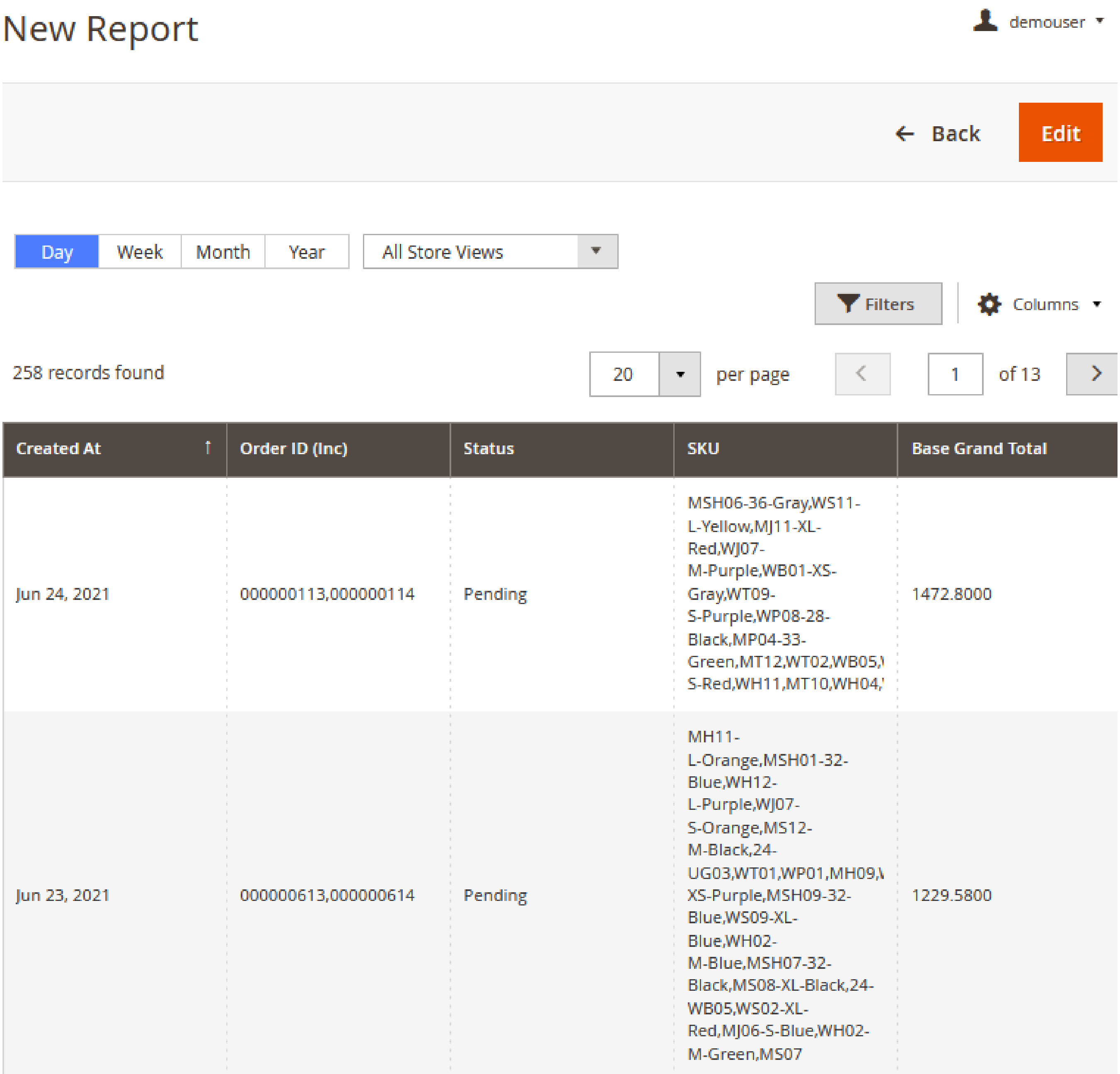



Please note, that after confirmation, the **Date** option type becomes the main option. The previously configured sorting and filtering setting of the main option will be reset.

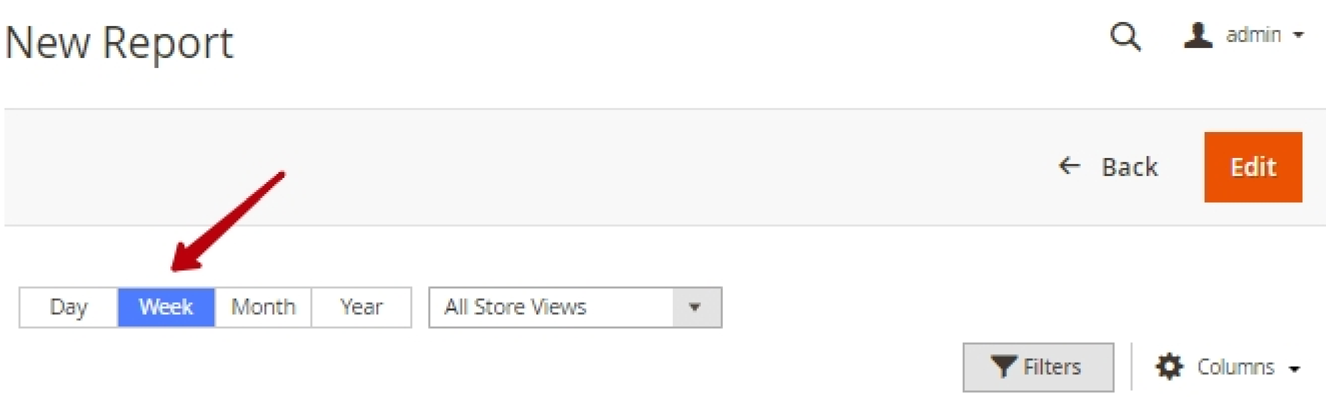




For example: We have several orders that were placed in different days/weeks/months. If we try to form a report based on periods, it will be displayed in the following way:




This way, we can see the list of orders and products by days/weeks/months/years. We can change the period using the options at the top of the grid.



A few words about the **date display specifics** for different intervals. Displaying the data grouped by periods, the extension shows the date of the beginning for each period.

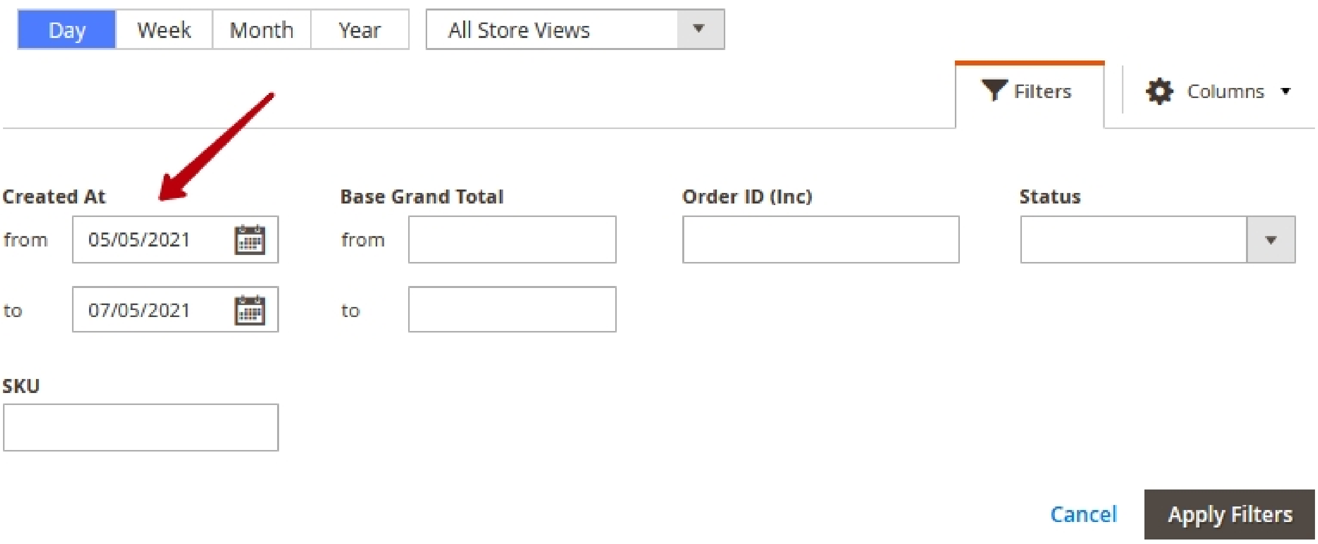
For example, if you are grouping the data by months, in the Creation Time column you will see the values like:

- Jan 1, 2021
- Feb 1, 2021
- Mar 1, 2021

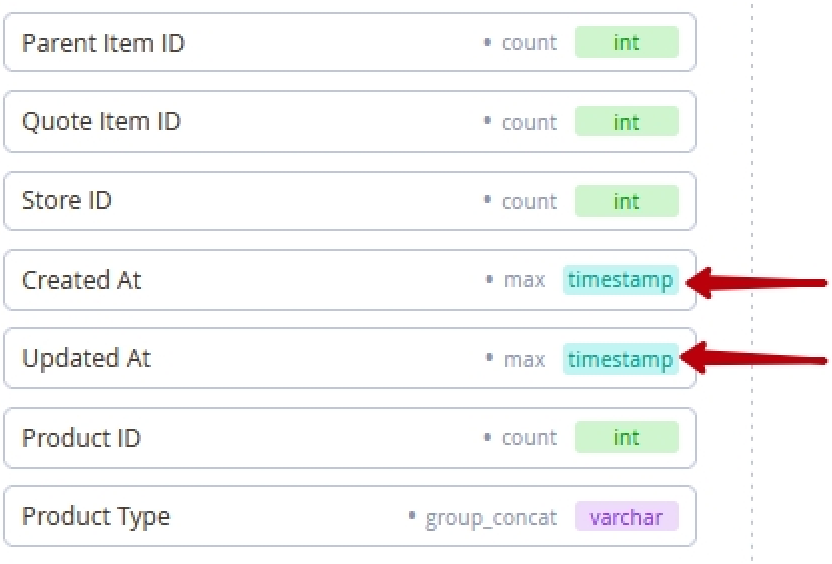
And if you are grouping the data by years, in the Creation Time column you will see the values like:

- Jan 1, 2020
- Jan 1, 2021
- Jan 1, 2022

Also, you can adjust the time period for your report in the filters toolbar on the report view page.

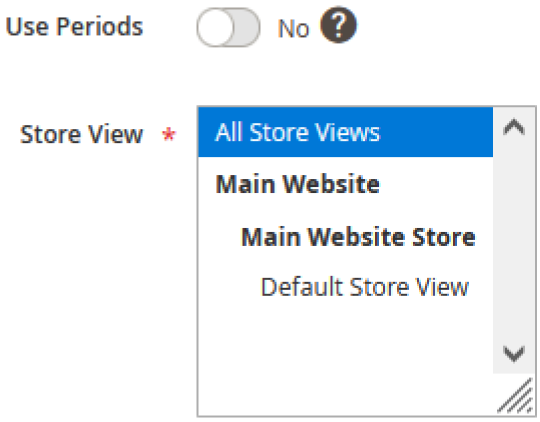



If you don't want to use periods you may add options with the *timestamp* type to your report and then set filtering for them separately.



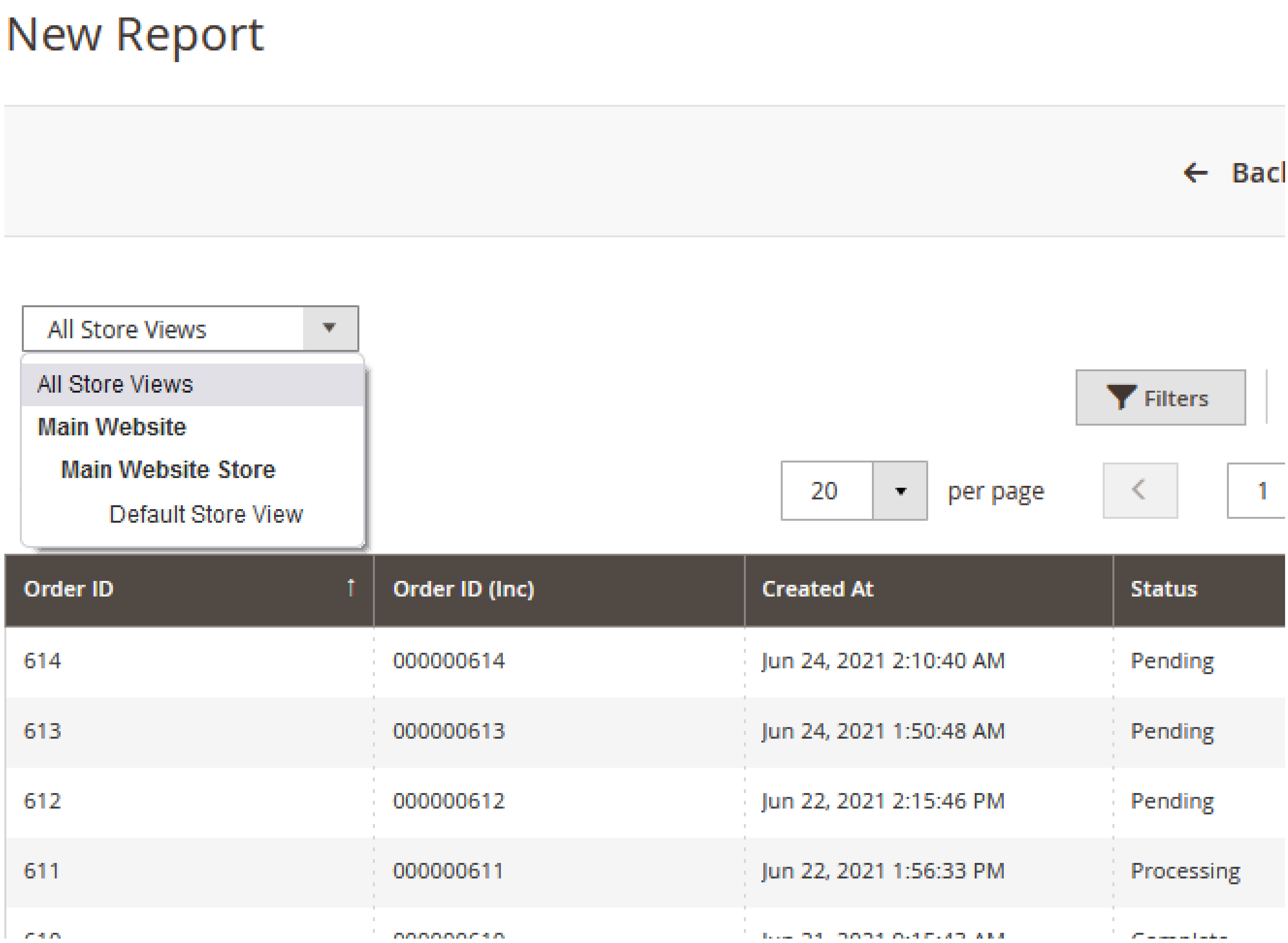

## 4. Build reports based on store views

This feature is available for the main entities with the store view scope.



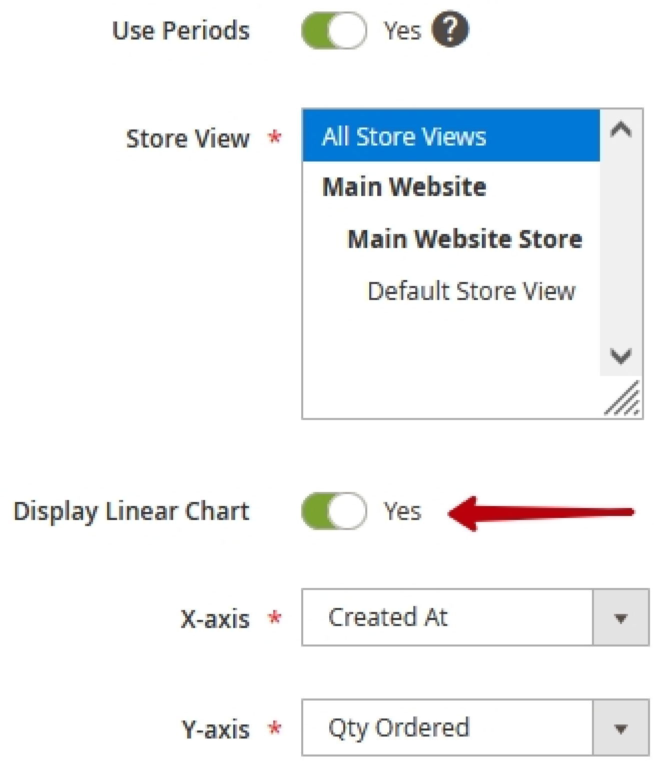

Please note, that this option is not available for the **Catalog Product** main entity.

You can also switch between store views on the report view page.

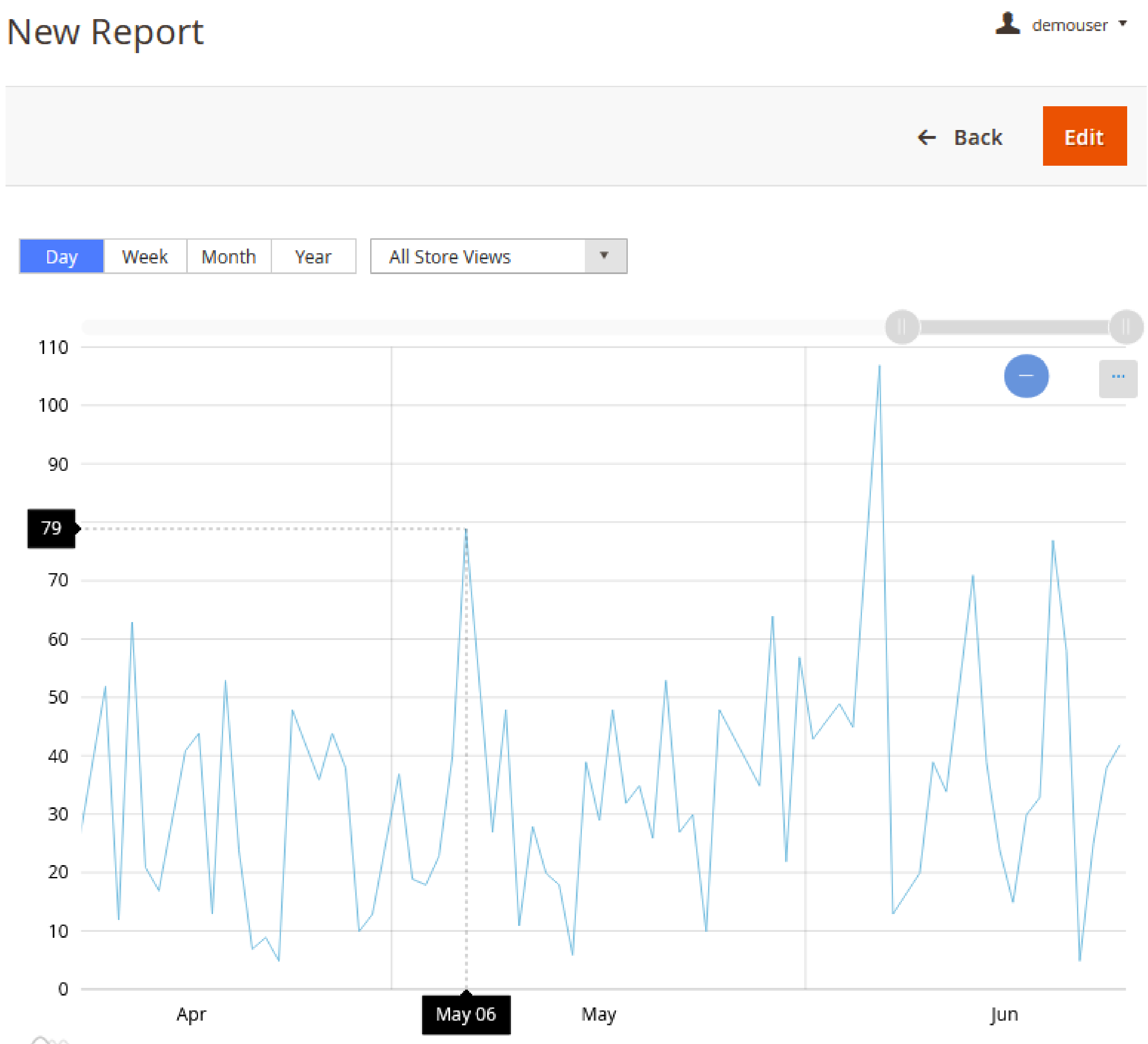



## 5. Enable graphs

To visualize reports, you can enable the **Display Linear Chart** option. You will see 2 additional settings: X and Y axes, for which you can add the values from the report data.




Then click **Save and View** and see how it looks on the report view page:




## 6. Actions with report columns

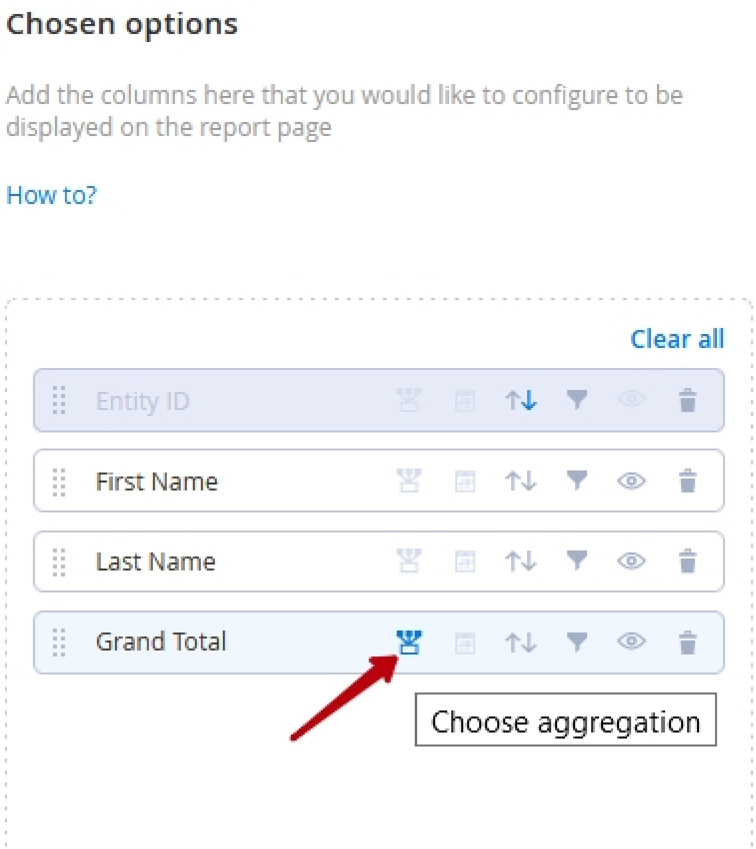
After adding several options to the report, you can apply various actions to options, like changing the type of aggregation, sorting, filtering, hiding, etc.

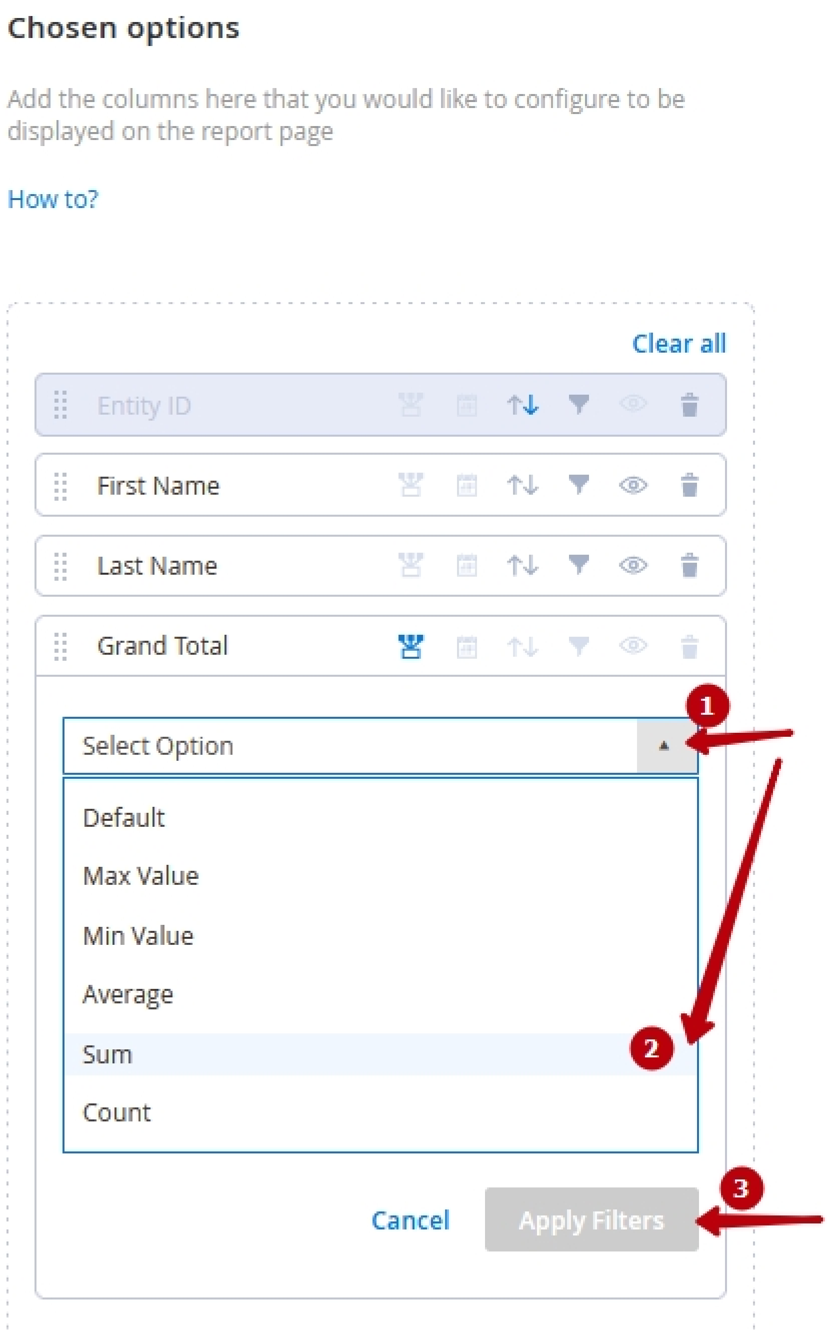
#### DATA AGGREGATION

Our Custom Reports Builder extension automatically aggregates data for more convenient and compact presentation in reports.

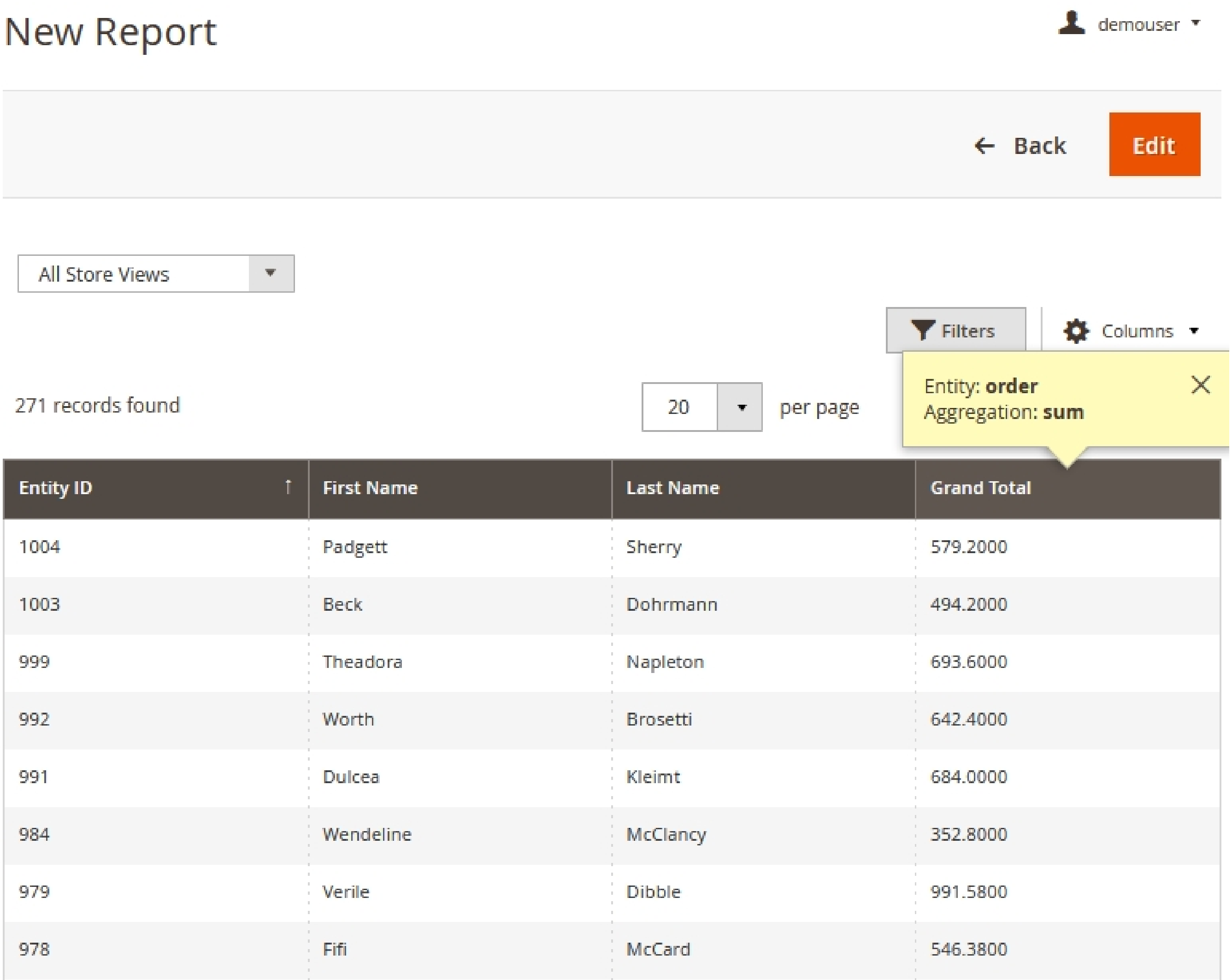
Please note, that you can choose the type of aggregation only for related entities. The columns of the main entity always use the default aggregation, and the columns of the remaining entities can be aggregated in relation to the main entity as it is required for a specific business case.

For example: if we build a report from Customer, and add the Grand Total column of the Order entity, the report can be displayed as the sum of the grand totals of customers orders, or as the average value of all customers orders, and so on - depending on the type of aggregation you choose.



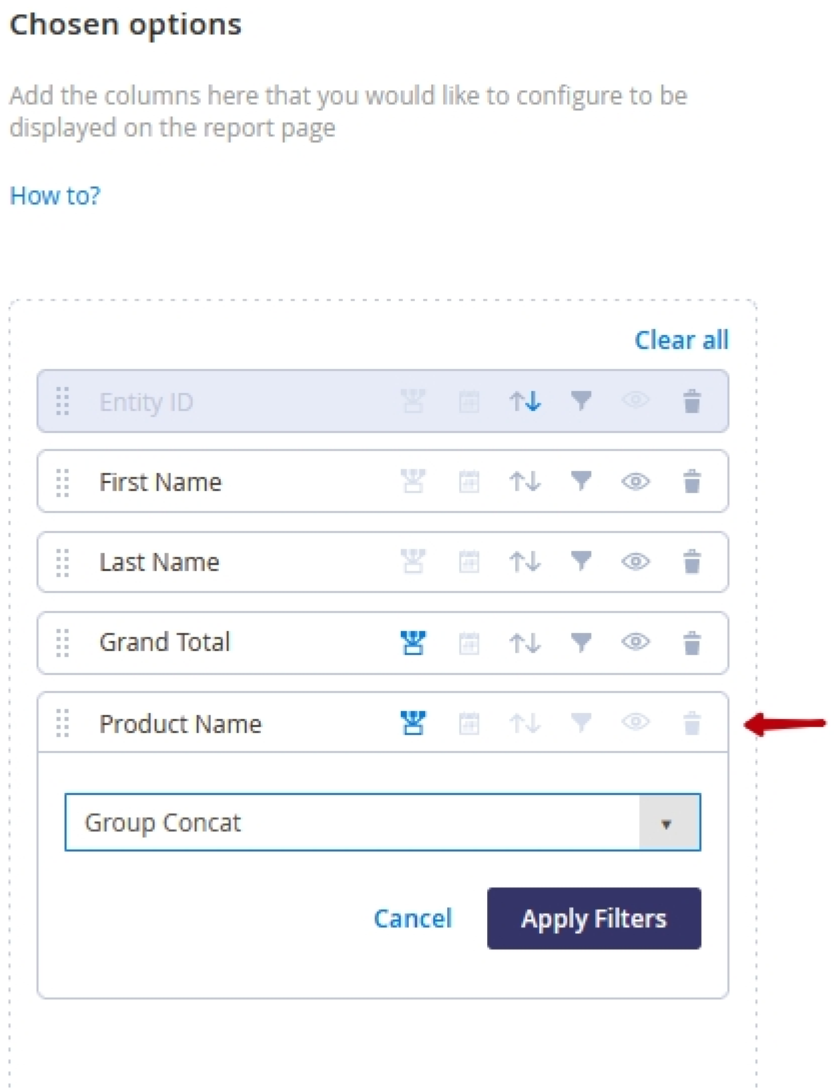



In this example, we applied the **sum** aggregation to the **Grand Total** column. Let's see how it looks on the report view page:

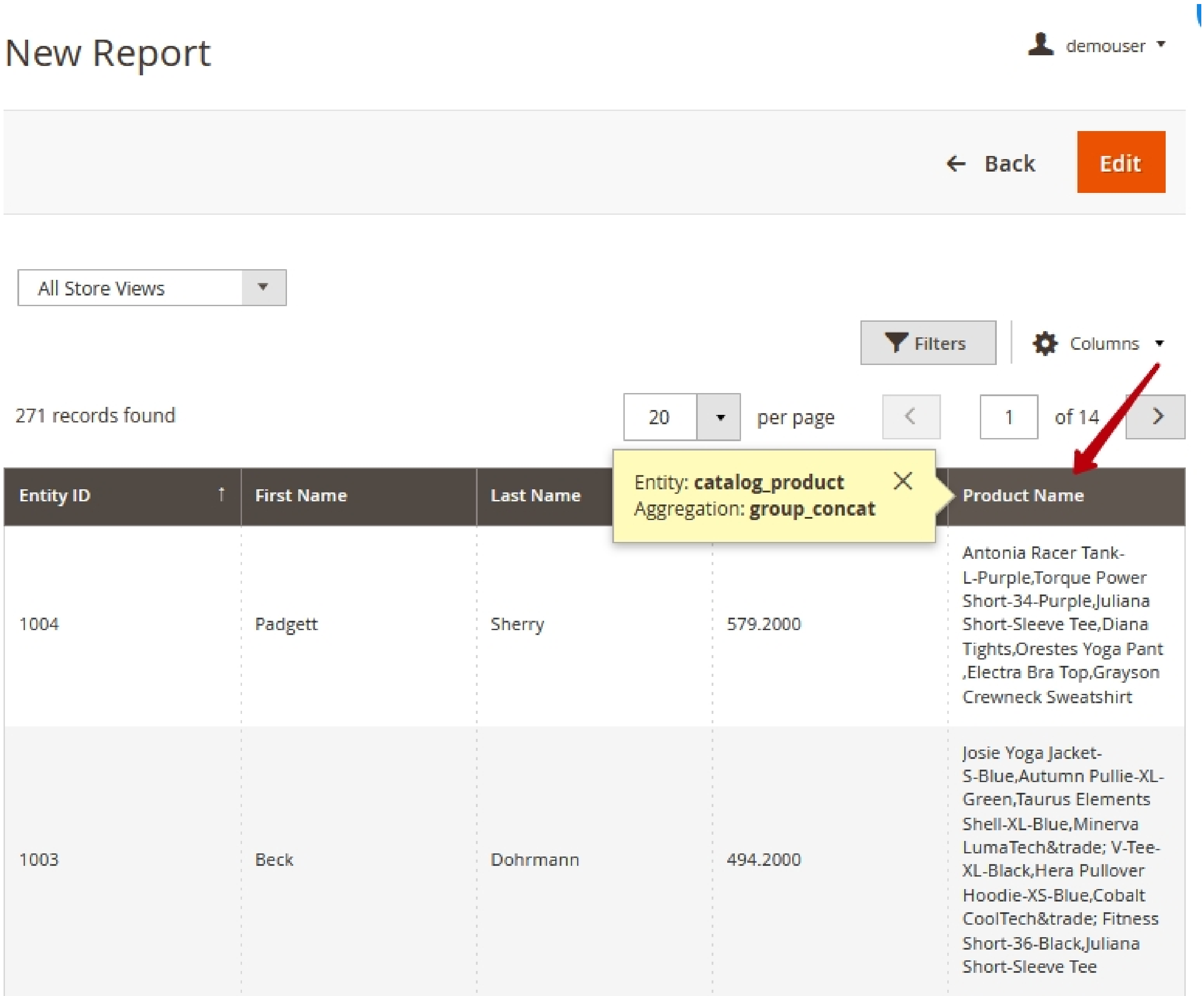



You can check the aggregation type for each column on the mouse hover. Here we can see, that the report displays the sum of the grand totals of customers' orders.

Or, as another example, let's add the **Product Name** column from the **Catalog Product** entity to our report and see how the **group_concat** aggregation works:




Let's see how it looks on the report view page:




Here, in the **Product Name** column we can see the list of products ordered by each customer.

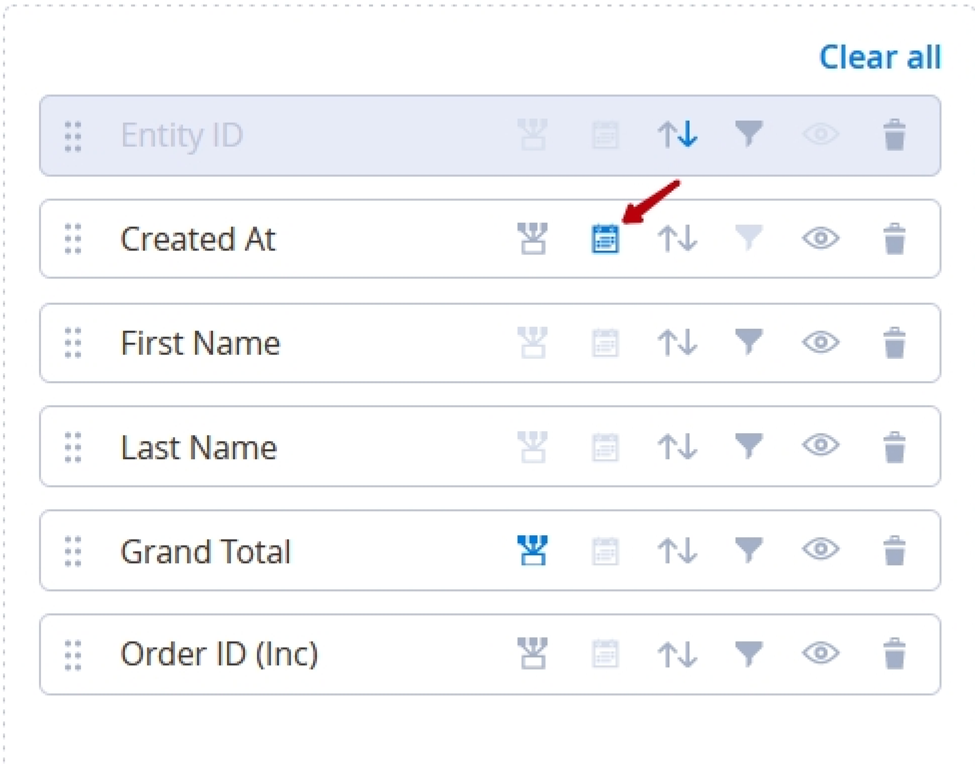
For now, you can use the following **types of aggregation**:

- **default** - uses default option aggregation
- **count** - displays the number of values of several rows
- **group_concat** - concatenates several values and lists them using a comma
- **sum** - sums up numeric values
- **max** - returns the maximum value among the numeric values
- **min** - returns the minimum value among the numeric values
- **avg** - returns the average value among the numeric values

Available **types of aggregation per options (columns) types**:

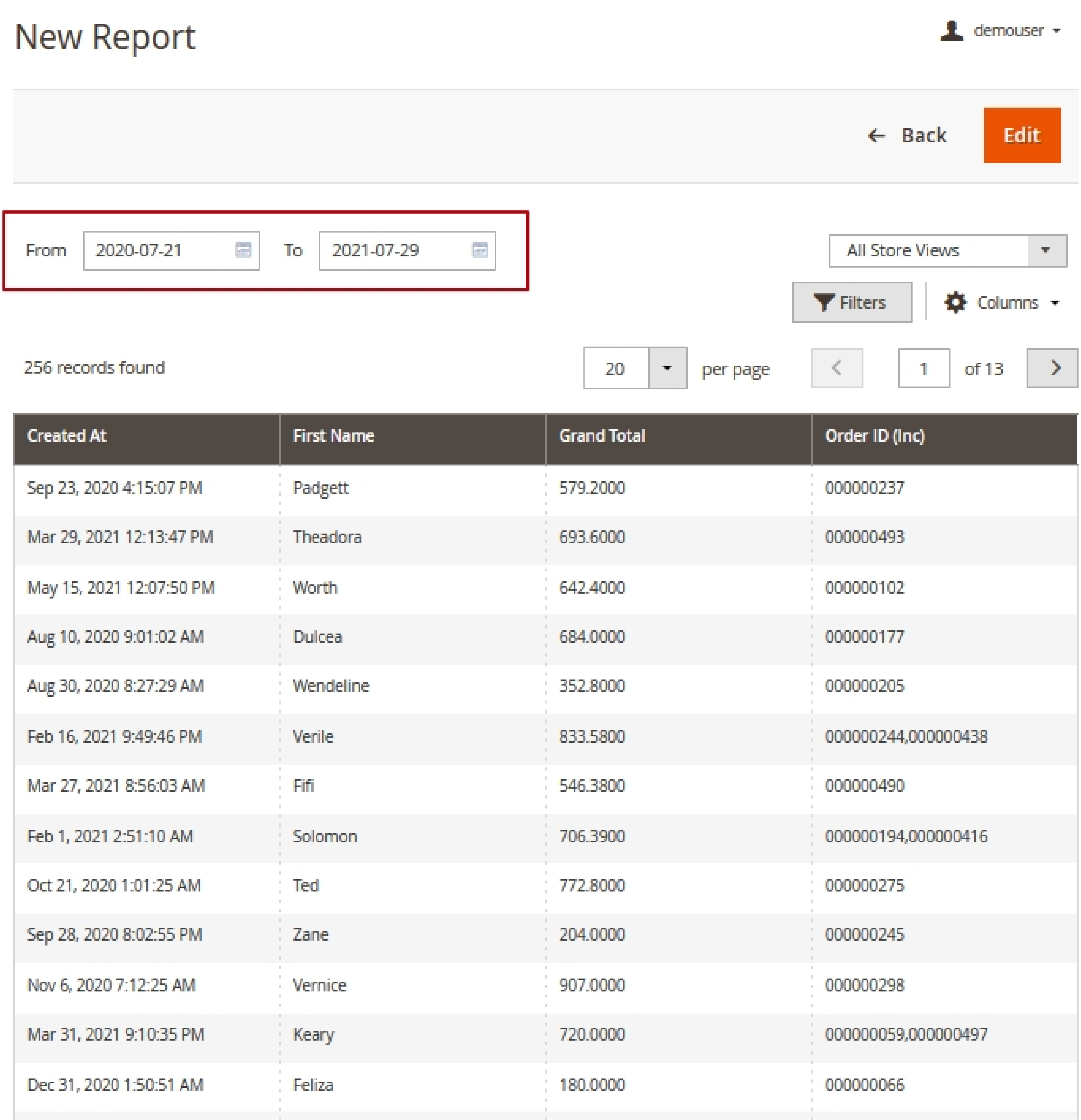
- **int:** default, sum, count, group_concat, min, max, avg
- **varhar:** default, sum, count, group_concat, min, max, avg
- **decimal:** default, sum, count, min, max, avg
- **timestamp:** default, min, max, avg

#### FILTERING BY PERIODS




This feature is available for the options with the Date (timestamp) type.

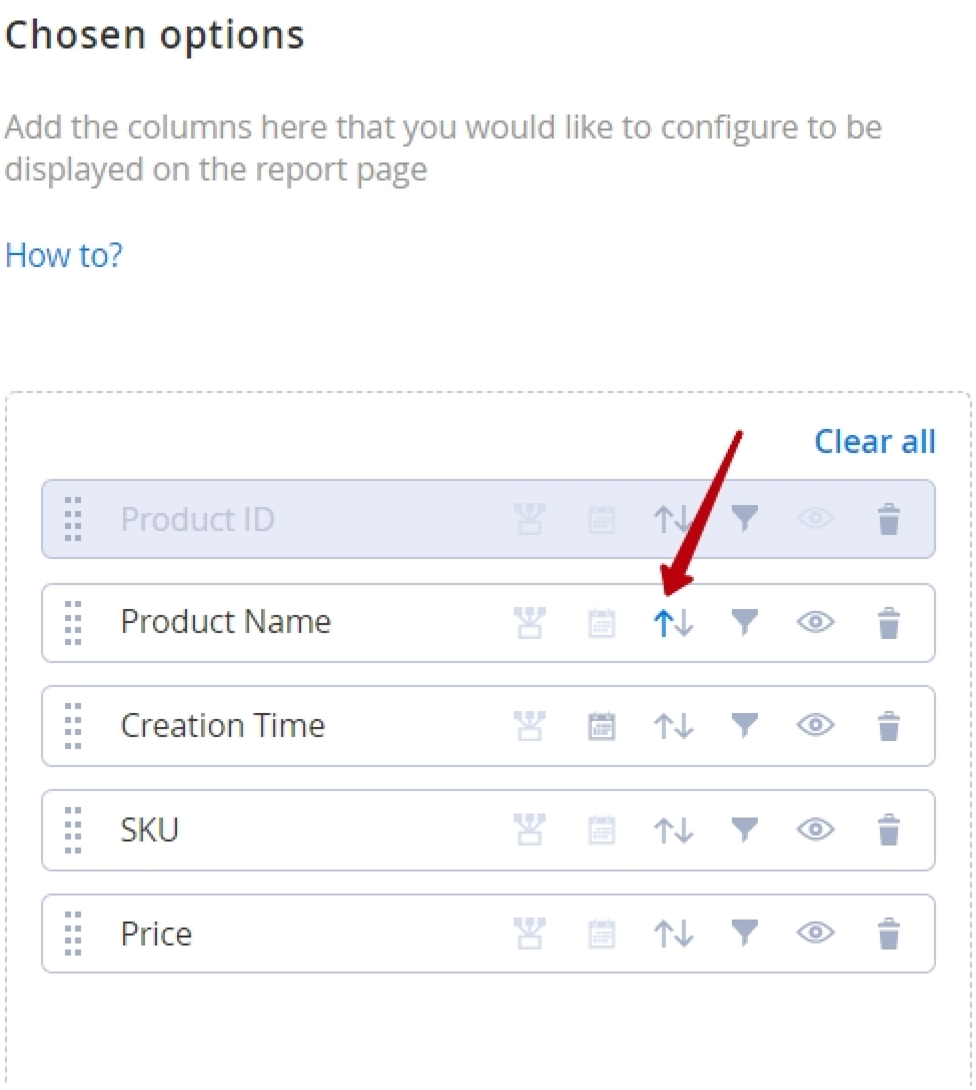
After enabling, filtering by dates becomes available for the chosen column with the from/to fields, which are displayed above the report grid on the report view page.



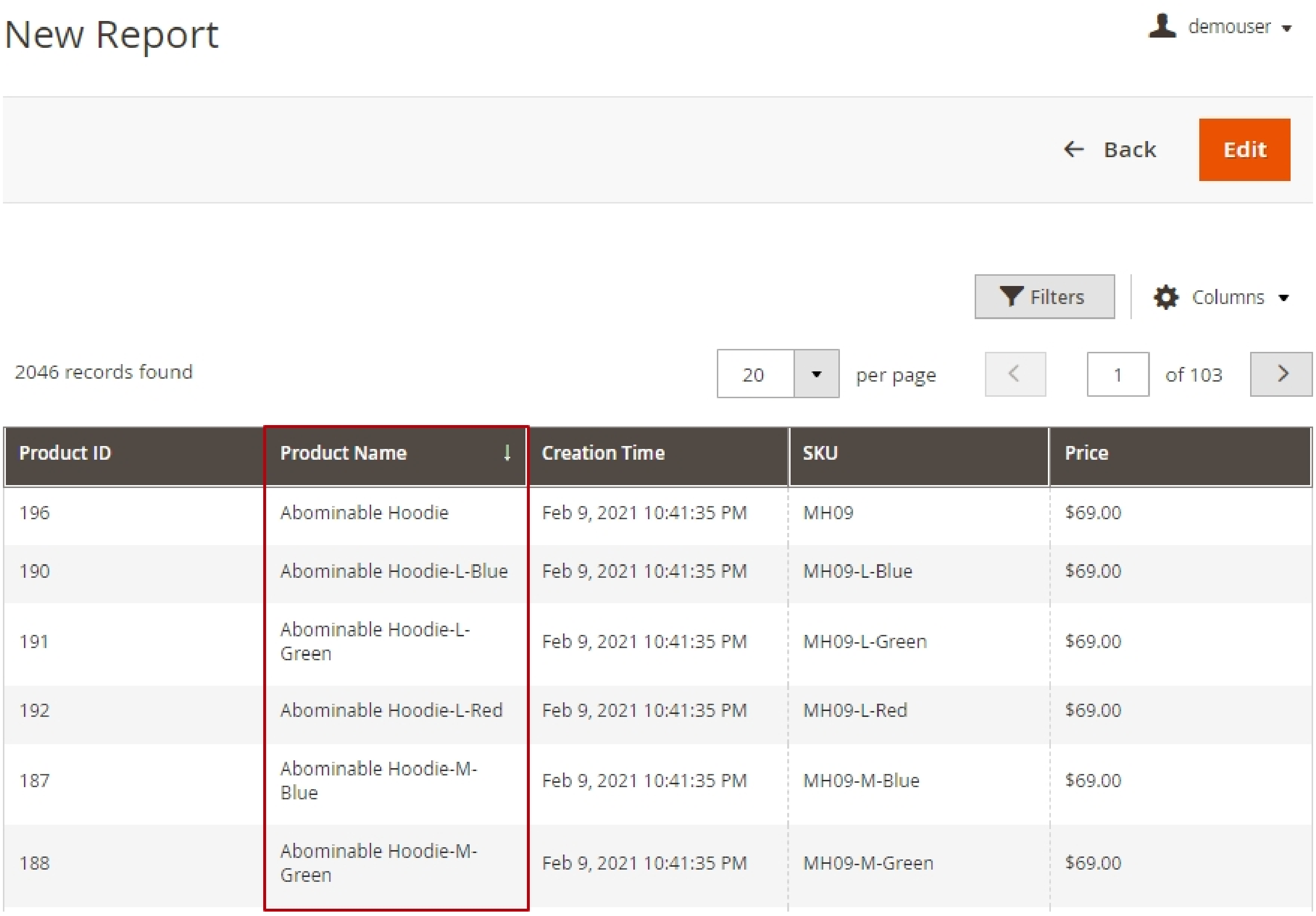

| Created At | First Name | Grand Total | Order ID (Inc) |
|---|---|---|---|
| Sep 23, 2020 4:15:07 PM | Padgett | 579.2000 | 000000237 |
| Mar 29, 2021 12:13:47 PM | Theadora | 693.6000 | 000000493 |
| May 15, 2021 12:07:50 PM | Worth | 642.4000 | 000000102 |
| Aug 10, 2020 9:01:02 AM | Dulcea | 684.0000 | 000000177 |
| Aug 30, 2020 8:27:29 AM | Wendeline | 352.8000 | 000000205 |
| Feb 16, 2021 9:49:46 PM | Verile | 833.5800 | 000000244,000000438 |
| Mar 27, 2021 8:56:03 AM | Fifi | 546.3800 | 000000490 |
| Feb 1, 2021 2:51:10 AM | Solomon | 706.3900 | 000000194,000000416 |
| Oct 21, 2020 1:01:25 AM | Ted | 772.8000 | 000000275 |
| Sep 28, 2020 8:02:55 PM | Zane | 204.0000 | 000000245 |
| Nov 6, 2020 7:12:25 AM | Vernice | 907.0000 | 000000298 |
| Mar 31, 2021 9:10:35 PM | Keary | 720.0000 | 000000059,000000497 |
| Dec 31, 2020 1:50:51 AM | Feliza | 180.0000 | 000000066 |

### SORTING

Sorting can be enabled for a single option only. The data can be sorted in ascending and descending order. By default, it is enabled for the main column, but you can activate it for any other column.

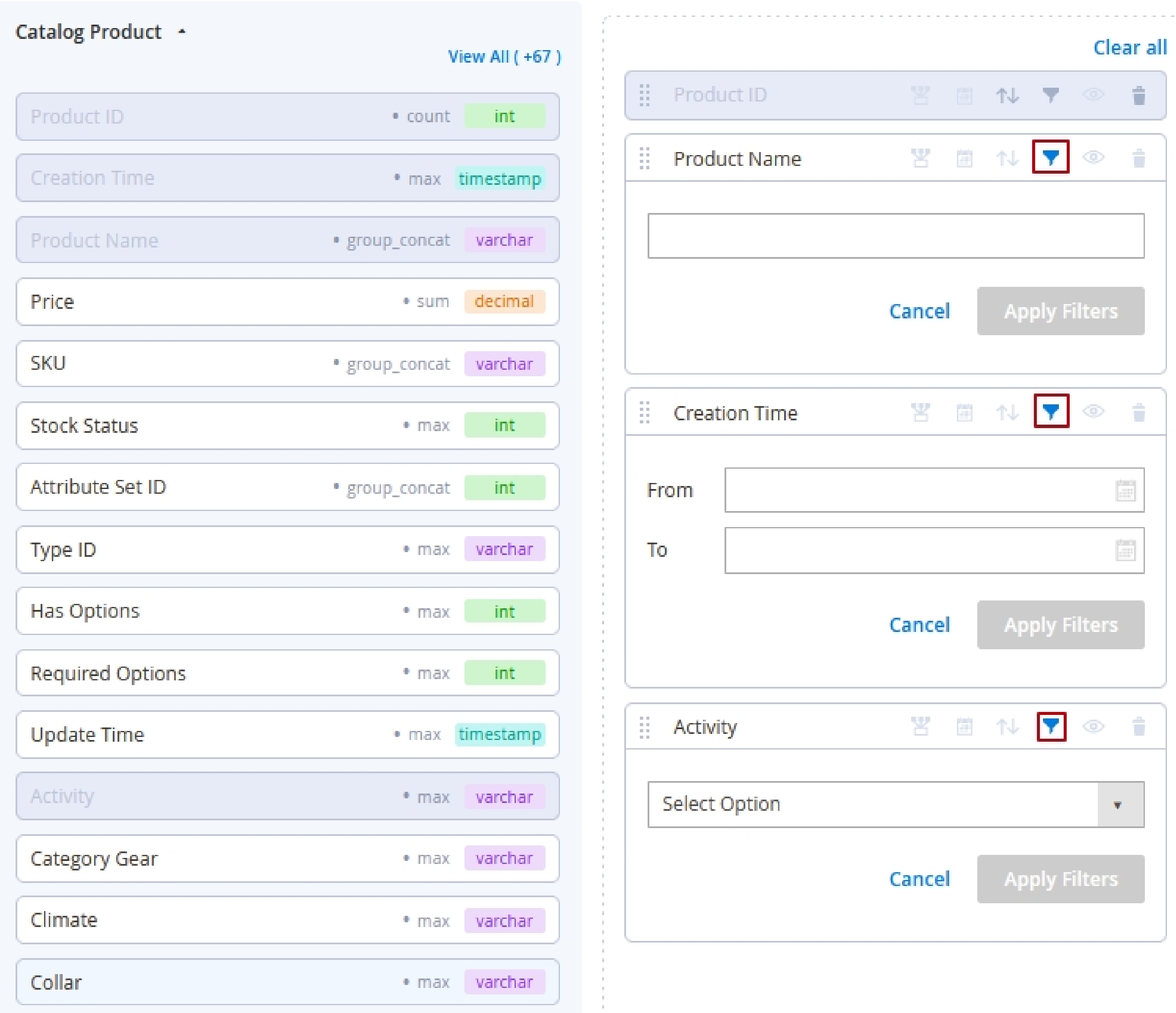



See how it looks on the report view page:

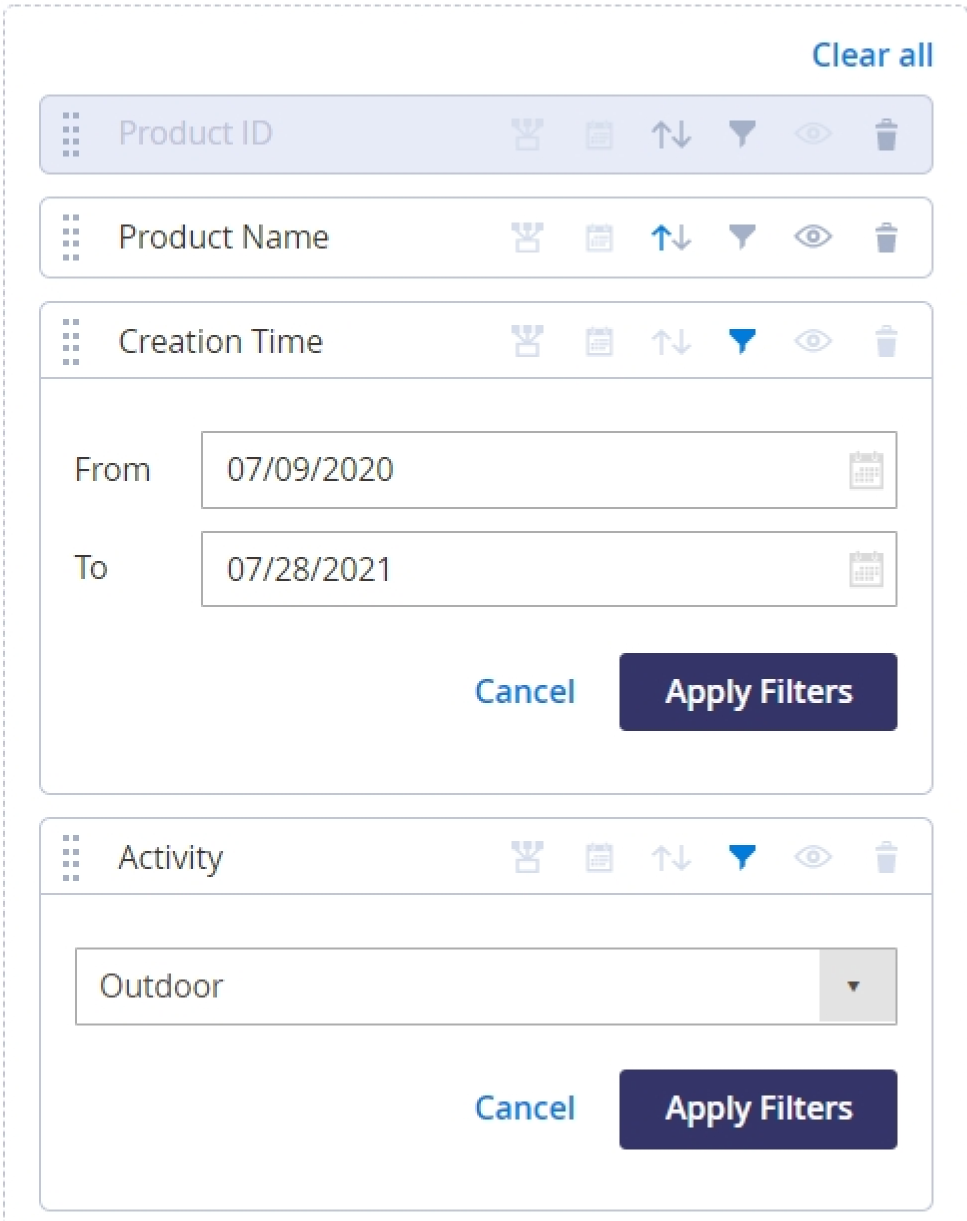



## FILTERING OPTIONS

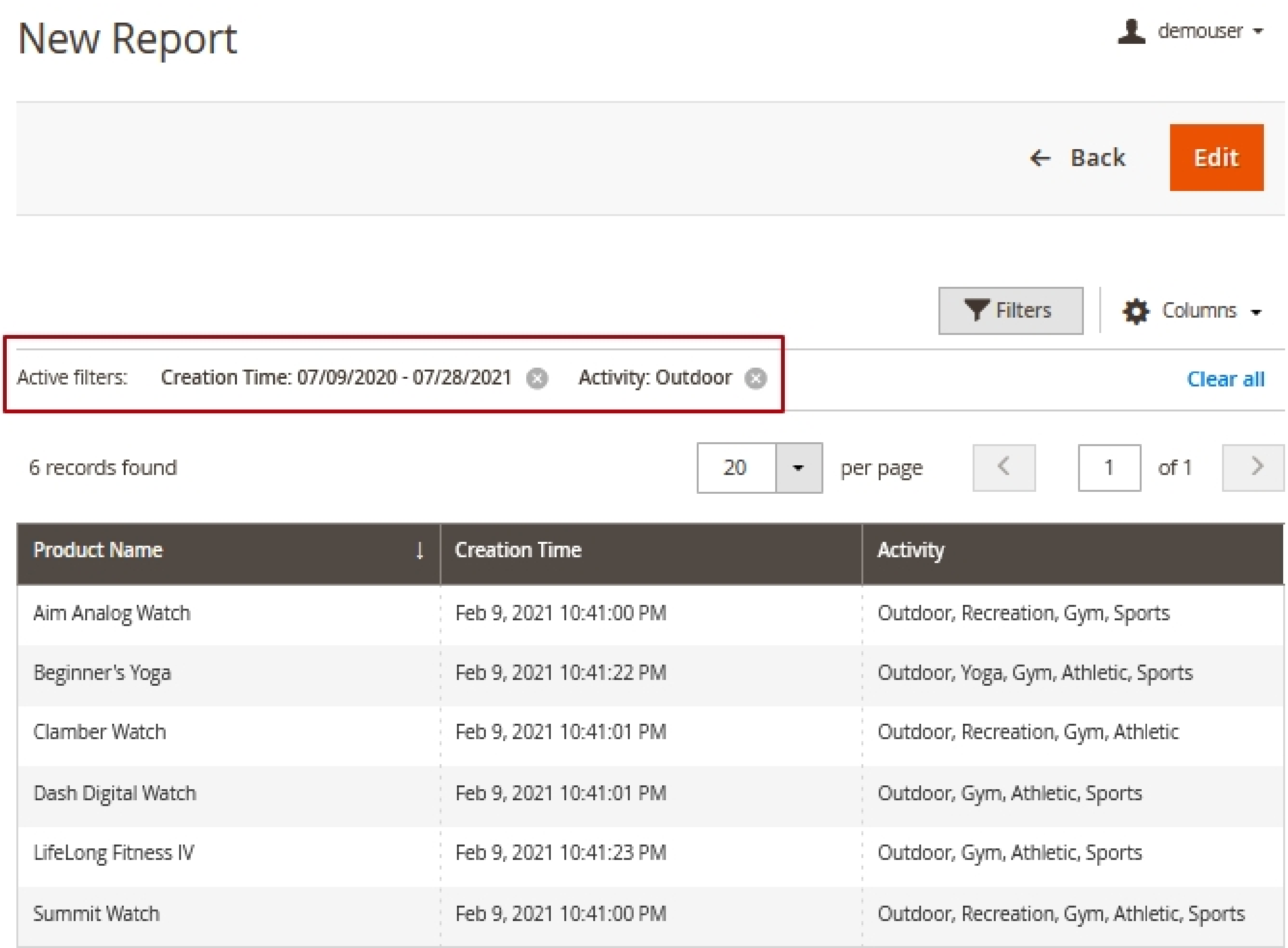
According to the types of chosen options, different filtering features become available for your report.



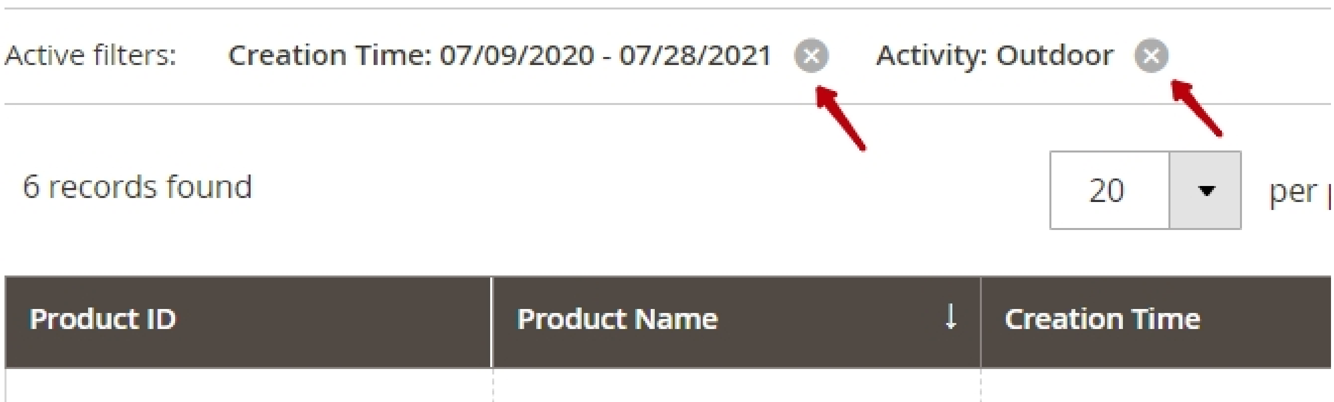

Enable the filtering for particular options by hitting the filter icon next to the option name. Then, specify the filtering parameters for these options and click the **Apply Filters** button. If you want to remove a filter from an option, just click the **Cancel**.




All applied filters will be displayed on the report view page.

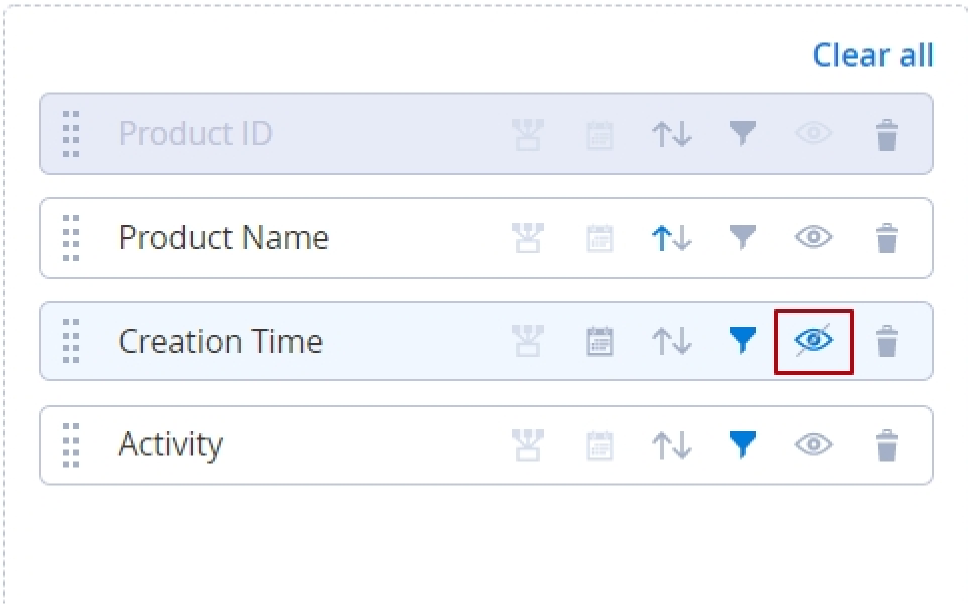



By the way, you can delete applied filters or add new ones on the report view page, but if you reopen the same report, it will be displayed again the way it was saved on the edit report page.




#### HIDING THE DATA

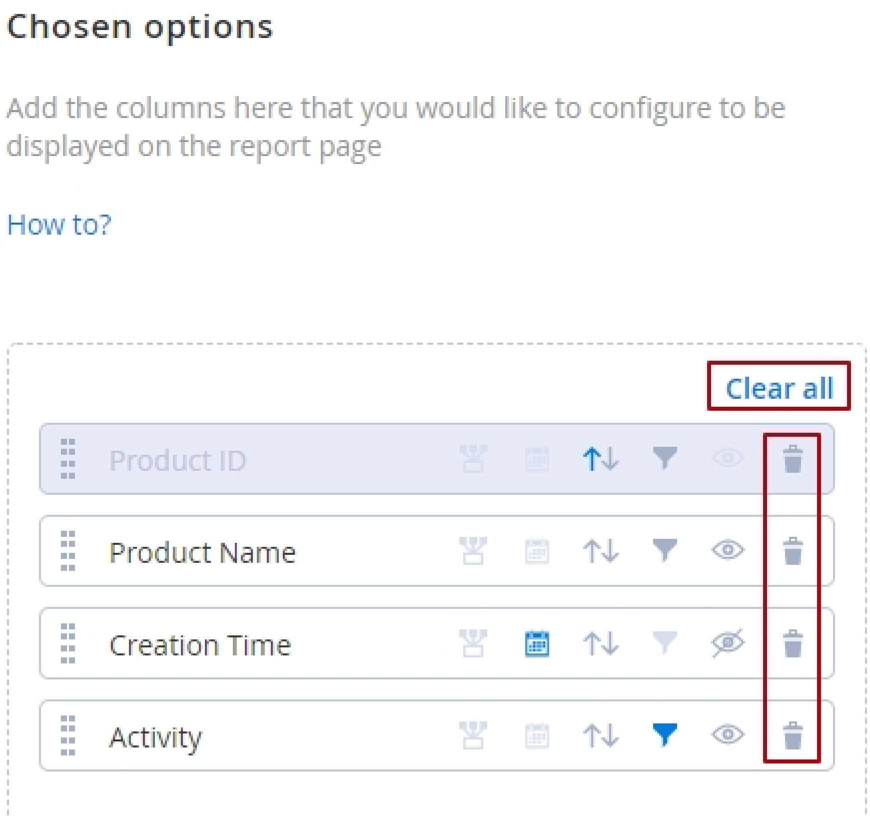
Please mind, that at least 2 options must be displayed in the report. That’s why the hiding icon becomes visible only when the third option is added.




With this functionality, you can add various options to establish a connection between entities while not displaying these options in the report. To hide an option, just click an eye icon next to the option name. The option will not be displayed on the report view page, while the connection between entities will remain.

#### REMOVING OPTIONS

You can easily delete any option using the appropriate icon. Moreover, you can click **Clear All** to remove all the options except the main one.



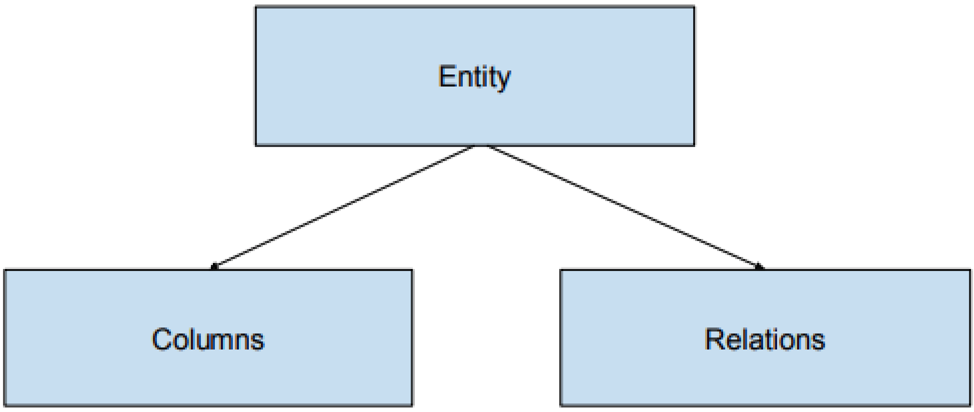

# Adding a new entity (information for developers)

Please consider, that adding entitities from third-party extensions **requires developer skills**.

The Custom Reports Builder is **capable of analyzing the data from third-party extensions**. To use this functionality, you should add a new entity to the module. Let's walk through the process of adding a new entity.

## Introduction

The use of entities in report generating is determined by special configuration files of entities. These files contain all information about entities. This way, the module perceives an **entity** as a container storing a set of data of the entity itself, its data, and its relationships with other entities.




A **column** is a data storage for an entity of a certain type. Later, this data can be visualized as a grid column on the view report page.

**Relation** - defines the linking rules for various entities with each other.

To add an entity, you need to create a configuration file in the module, the entity of which you want to add to the report.

You need to create an XML file in the following directory:**<module_root>/etc/ambuilder_entity_scheme**. The file name should match the name of the entity (e.g. catalog_product.xml).

The file should describe the entity (name, title, main table), the columns of the entity (name, title, data type, etc.), and its relations.

Please, keep in mind, that it is not necessary to describe all the columns in the XML file. It will be enough to describe only the control ones. Other entity columns will be formed by the Db and Eav adapters.

## Configuration file description

### ENTITY DESCRIPTION

The file is represented by the **amasty_report_builder_entities** section, which contains the configuration of one or more entities.

**Entity section** has a required string parameter “name”. This parameter defines the unique entity key by which the entity data object will be created. The section can also contain two optional boolean parameters “primary” and “eav”.

**The “primary” parameter** can be true or false. All entities described in XML are divided into two types:

- Primary
- Secondary

Primary entities can be used as the main report entity. Secondary ones serve for additional filling the report with data. If the primary parameter is not specified explicitly, the entity is considered secondary.

This division is intended to simplify the formation of a request for report data. If it is not needed to define an entity as primary for the report, it is better to define it as secondary.

**The "eav" parameter** can be true or false. This parameter is used to specify eav entities. For eav entities, the configuration object is additionally filled with data from eav tables.

The "entity" section should contain the following subsections: title, main_table (name of the main table without a prefix), columns, relations. For expandability purposes, finding these sections is not validated in the XML. However, the entity should have a title, its own table, and at least one column.

**The "columns" section** contains the description of the columns (entity data). The section should include at least one "column" subsection.

**Section "relations"** contains a description of the relations between entities. The links between entities can be of two types: simple (link through a column) and complex (link through a junction table). The section should have at least one "relation" subsection.

### COLUMNS DESCRIPTION

**Section "column"** contains the required string parameter "name", which is a unique column key in the entity configuration. Also, the section can have four optional parameters: primary, useForPeriod, frontendModel, eavAttribute.

**The primary parameter for the column** can be true or false. Defines the main column of the entity. The main column of an entity is always presented in the report. The entity must have the main column. If several columns are specified as main - the first one will be selected as the main one.

**UseForPeriod parameter** can be true or false. This parameter determines whether the column can be used to generate an entity report using grouping by date periods. This parameter should be specified only for columns of types: date, datetime, and timestamp

**The frontendModel parameter** accepts a string. This parameter determines the type of HTML element when adding a filter to a column. Possible options: text, select, multiselect, textRange, dateRange

**The eavAttribute parameter** can be true or false. This parameter indicates that the column is an attribute of the eav entity.

This section can have the following subsections: title, type, aggregation_type, source_model, hidden, options.

- title - defines the title of the column, which is displayed on the pages of editing and displaying the report
- type - defines the data type of the column. Available types: int, decimal, text, date
- aggregation_type - defines the type of aggregation of the column when grouping. If not

specified, the type is determined automatically based on the data type of the column.
- source_model - can be set for a column with a frontendModel of select and multiselect types.
- options - can be set for columns with a frontendModel of select and multiselect types. For eav attributes they are filled automatically.

#### RELATIONS DESCRIPTION

**“Relation” section** should have two required attributes: name and type. The “name” parameter is a unique link key in the entity object. It is also a pointer to the name of the entity with which this entity is connected.

**Parameter “type”** defines the type of connection (column or table).

A “relation” section of the “column” type must include the following subsections:

- column - the column of the entity to be linked
- reference_column - the column of the current entity
- relationship_type - type of relations connection (one to one, one to many, many to one)

A “relation” section of the “table” type should include the following subsections:

- column - the column of the entity to be linked
- reference_column - the column of this entity
- relation_table - the name of the junction table
- relation_column - the name of the junction table column pointing to the name of the linked entity column
- relation_reference_column - the name of the junction table column pointing to the column name of this entity
- relationship_type - type of relations connection

#### EXTENSION

After determining the relationships of the new entity with other entities, it is also needed to determine the inverse relationship of these entities with the newly added one. Thus, it is required to add one more (or several) extension files of the existing entities and define the relations between them and the newly added entity. These files should contain the entity and relations sections and describe the connection with the newly added entity. See the example of such a file below.

## Templates

Please mind, that the files in this section are just templates. Instead of *(?)* mark there should be the data from your entities. The parameters can be removed or added depending on your reporting requirements.

#### ENTITY FILE

```
<?xml version="1.0"?>

<config xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="urn:amasty:module:Amasty_ReportBuilder:etc/en
tity_scheme.xsd">
 <amasty_report_builder_entities>
  <entity name="(?)" primary="(?)" eav ="(?)">
    <title>(?)</title>
    <main_table>(?)</main_table>

    <columns>
      <column name="(?)" primary="(?)" />
      <column name="(?)" useForPeriod="(?)"/>
      <column name="(?)" frontendModel="(?)"/>
      <column name="(?)" eavAttribute="(?)"/>
      <column name="(?)">
          <hidden>(?)</hidden>
          <title>(?)</title>
          <type>(?)</type>
          <aggregation_type>(?)</aggregation_type>
          <source_model>(?)</source_model>
          <options>(?)</options>
       </column>
      </columns>

    <relations>
      <relation name="(?)" type="(?)">
          <column>(?)</column>
          <reference_column>(?)</reference_column>
          <relationship_type>(?)</relationship_type>
          <relation_column>(?)</relation_column>
          <relation_table>(?)</relation_table>
          <relation_reference_column>(?)</relation_reference_column>
      </relation>
   </relations>
  </entity>
 </amasty_report_builder_entities>
</config>
```

#### EXTENSION FILE

```
<?xml version="1.0"?>

<config xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="urn:amasty:module:Amasty_ReportBuilder:etc/en
tity_scheme.xsd">
    <amasty_report_builder_entities>
```

```
        <entity name="(?)" eav="(?)" primary="(?)">
            <relations>
                <relation name="(?)" type="(?)">
                    <column>(?)</column>
                    <reference_column>(?)</reference_column>
                    <relationship_type>(?)</relationship_type>
                </relation>
            </relations>
        </entity>
    </amasty_report_builder_entities>
</config>
```

---

Find out how to install the **Custom Reports Builder** extension for Magento 2 via Composer.

From:
https://stg.amasty.net/docs/ - **Amasty Extensions FAQ**

Permanent link:
**https://stg.amasty.net/docs/doku.php?id=magento_2:custom_reports**

Last update: **2021/08/06 15:07**