My data cleaning plan:

1. Understand the columns: ‘id’ is the record identifier for this table, ‘menu\_page\_id’ is foreign key which references the record to the menu table, ‘dish\_id’ is another foreign key which references the record to the dish table. These three records identify the record and its relation to the remainder of the data set. ‘price’ and ‘high\_price’ will give the price of the menu item and the highest it has ever been. ‘created\_at’ and ‘updated\_at’ gives the date and time when record was first recorded and last updated. ‘xpos’ and ‘ypos’ provides the location of the record on the actual menu page.
   1. What do I expect: ‘id’ should be unique and integer as they are all numeric. The other two id columns are also numeric therefore should be integer. They refer to other tables so may not be unique here. Prices columns represent value and therefore should be float to account for fractional units of value. Created and Update represent date time so should be a datetime format. Xpos and ypos represent coordinates on a page and therefore should be float as these are numeric.
   2. What do I see: id columns are correctly formatted as integer except for ‘dish\_id’ which has null values meaning the record is not linked to the dish menu. Many prices are missing and contain null values. Record creation and update are not the correct format while positions are correctly formatted as float. Additionally, because none of the numeric column Dtypes in Pandas is Object one can safely assume there are no whitespace issues.
2. What do I need to do to get them to what I expect:
   1. Fill null values with zero.
   2. Convert dish\_id to integer.
   3. Convert created and updated into datetime format.
   4. Above transformations can be easily executed using the Pandas library in Python.
3. Final cleaned data:
   1. Regarding null values converted to 0. The original column is left intact so user may analyze original value with transformed value and decide based on specific search question.
   2. Created and Update columns are converted to datetime to allow for chronological searches.
   3. The MenuItem table provides a chronological history of menu items and further transformations may be required in the context of other related data in dishes and menu table.