Setup

```
In [1]:  import sys
         from pathlib import Path

         project_dir = Path(".")
         config_path = project_dir / "config"
         services_path = project_dir / "services"
         sys.path.append(str(config_path))
         sys.path.append(str(services_path))

         from connection import Connection
         from mongoServices import MongoServices

         conn = Connection()
         db = conn.connect()

         services = MongoServices(db)
         reviews_collection = db.get_collection("reviews")
```

```
Connected to MongoDB database: amazon_reviews
```

Document(s) insertion

```
In [31]:  document = {
              'AVpe7AsMilAPnD_bDAGEG': {
                "id": "AVpe7AsMilAPnD_bDAGEG",
                "asins": "B08VJ5VJZX",
                "brand": "Amazon",
                "categories": "Amazon Devices, Amazon.com",
                "colors": "",
                "dateAdded": "2023-08-22T14:21:53Z",
                "dateUpdated": "2024-01-10T16:52:58Z",
                "dimension": "135 mm x 170 mm x 20 mm",
                "ean": "",
                "keys": "kindleshd/b08vj5vjzx",
                "manufacturer": "Amazon",
                "manufacturerNumber": "",
                "name": "Kindle Oasis",
                "prices": "[{\"amountMax\":249.99,\"amountMin\":249.99,\"currency\":\"
                "reviews_date": '',
                  "reviews_doRecommend": '',
                  "reviews_numHelpful": '',
                  "reviews_rating": 4,
                  "reviews_sourceURLs": 'http://www.amazon.ca/product-reviews/B00QJDU3
                  "reviews_text": "Trs heureux que les livres soient sur Icloud. Aprs
                  "reviews_title": '',
                  "reviews_userCity": '',
                  "reviews_userProvince": '',
                  "reviews_username": 'Shepherd',
                  "sizes": '',
                  "upc": '',
                  "weight": '300 grams'
```

```
    },
    'BXi9sdjXj0lwK9vsaA2GZ5': {
      "id": "BXi9sdjXj0lwK9vsaA2GZ5",
      "asins": "B09G8LPJ8Z",
      "brand": "Amazon",
      "categories": "Amazon Devices, Amazon.com",
      "colors": "",
      "dateAdded": "2023-09-01T15:30:00Z",
      "dateUpdated": "2024-01-09T10:12:00Z",
      "dimension": "130 mm x 170 mm x 18 mm",
      "ean": "",
      "keys": "kindletouch/b09g8lpj8z",
      "manufacturer": "Amazon",
      "manufacturerNumber": "",
      "name": "Kindle Paperwhite 11th Gen",
      "prices": "[{\"amountMax\":139.99,\"amountMin\":139.99,\"currency\":\"
      "reviews_date": '',
        "reviews_doRecommend": '',
        "reviews_numHelpful": '',
        "reviews_rating": 4,
        "reviews_sourceURLs": 'http://www.amazon.ca/product-reviews/B00QJDU3
        "reviews_text": "Trs heureux que les livres soient sur Icloud. Aprs
        "reviews_title": '',
        "reviews_userCity": '',
        "reviews_userProvince": '',
        "reviews_username": 'Shepherd',
        "sizes": '',
        "upc": '',
        "weight": '300 grams'
    },
    'sOIjfgmNl2apL7w_MSKLx': {
      "id": "sOIjfgmNl2apL7w_MSKLx",
      "asins": "B07VJYZF59",
      "brand": "Amazon",
      "categories": "Amazon Devices, Amazon.com",
      "colors": "",
      "dateAdded": "2022-11-15T18:30:00Z",
      "dateUpdated": "2023-12-20T11:22:00Z",
      "dimension": "140 mm x 160 mm x 20 mm",
      "ean": "",
      "keys": "kindlehd10/b07vjyzf59",
      "manufacturer": "Amazon",
      "manufacturerNumber": "",
      "name": "Kindle HD 10",
      "prices": "[{\"amountMax\":179.99,\"amountMin\":179.99,\"currency\":\"
      "reviews_date": '',
        "reviews_doRecommend": '',
        "reviews_numHelpful": '',
        "reviews_rating": 4,
        "reviews_sourceURLs": 'http://www.amazon.ca/product-reviews/B00QJDU3
        "reviews_text": "Trs heureux que les livres soient sur Icloud. Aprs
        "reviews_title": '',
        "reviews_userCity": '',
        "reviews_userProvince": '',
        "reviews_username": 'Shepherd',
        "sizes": '',
```

```
            "upc": '',
            "weight": '300 grams'
          },
        'v5OIjT6C1Jxl72kj5Zl5Vg': {
          "id": "v5OIjT6C1Jxl72kj5Zl5Vg",
          "asins": "B08VJM2Z8X",
          "brand": "Amazon",
          "categories": "Amazon Devices, Amazon.com",
          "colors": "",
          "dateAdded": "2023-12-01T14:55:00Z",
          "dateUpdated": "2024-01-10T10:30:00Z",
          "dimension": "150 mm x 170 mm x 22 mm",
          "ean": "",
          "keys": "kindlehd10/b08vjm2z8x",
          "manufacturer": "Amazon",
          "manufacturerNumber": "",
          "name": "Kindle Fire HD 8",
          "prices": "[{\"amountMax\":129.99,\"amountMin\":129.99,\"currency\":\"
          "reviews_date": '',
            "reviews_doRecommend": '',
            "reviews_numHelpful": '',
            "reviews_rating": 4,
            "reviews_sourceURLs": 'http://www.amazon.ca/product-reviews/B00QJDU3
            "reviews_text": "Trs heureux que les livres soient sur Icloud. Aprs
            "reviews_title": '',
            "reviews_userCity": '',
            "reviews_userProvince": '',
            "reviews_username": 'Shepherd',
            "sizes": '',
            "upc": '',
            "weight": '300 grams'
          },
        'HgLp9jK2e6Kt54Lq9V6Cj5': {
          "id": "HgLp9jK2e6Kt54Lq9V6Cj5",
          "asins": "B06XFG96Q5",
          "brand": "Amazon",
          "categories": "Amazon Devices, Amazon.com",
          "colors": "",
          "dateAdded": "2022-10-10T12:40:00Z",
          "dateUpdated": "2023-11-15T16:50:00Z",
          "dimension": "155 mm x 185 mm x 25 mm",
          "ean": "",
          "keys": "kindlehd10/b06xfg96q5",
          "manufacturer": "Amazon",
          "manufacturerNumber": "",
          "name": "Fire HD 10 Plus",
          "prices": "[{\"amountMax\":189.99,\"amountMin\":189.99,\"currency\":\"
          "reviews_date": '',
            "reviews_doRecommend": '',
            "reviews_numHelpful": '',
            "reviews_rating": 4,
            "reviews_sourceURLs": 'http://www.amazon.ca/product-reviews/B00QJDU3
            "reviews_text": "Trs heureux que les livres soient sur Icloud. Aprs
            "reviews_title": '',
            "reviews_userCity": '',
            "reviews_userProvince": '',
```

```
            "reviews_username": 'Shepherd',
            "sizes": '',
            "upc": '',
            "weight": '300 grams'
        }
    }

    services.insert_document(reviews_collection, document)
```

INFO:root:Inserting data into 'reviews'
INFO:root:Data inserted into 'reviews' successfully.

Out[31]: InsertManyResult([ObjectId('67903984bcb8c6317213f0f4'), ObjectId('67903984b
cb8c6317213f0f5'), ObjectId('67903984bcb8c6317213f0f6'), ObjectId('67903984
bcb8c6317213f0f7'), ObjectId('67903984bcb8c6317213f0f8')], acknowledged=Tru
e)

Document(s) update

In [3]:
```
### 1 -----------------------------------------------------------------

filter = { 'name': 'Kindle Paperwhite' }
new_data = { 'weight': '300 grams' }

result = services.update_document(reviews_collection, filter, new_data)

if result:
    print(f"Matched: {result.matched_count}, Updated: {result.modified_count

### 2 -----------------------------------------------------------------

filter = { 'manufacturer': 'Amazon' }
new_data = { 'manufacturer': 'Azamon Co.' }

result = services.update_document(reviews_collection, filter, new_data)

if result:
    print(f"Matched: {result.matched_count}, Updated: {result.modified_count

### 3 -----------------------------------------------------------------

filter = { 'reviews_date': '' }
new_data = { 'reviews_title': '' }

result = services.update_document(reviews_collection, filter, new_data)

if result:
    print(f"Matched: {result.matched_count}, Updated: {result.modified_count

### 4 -----------------------------------------------------------------

filter = { 'manufacturerNumber': 'D01101' }
new_data = { 'manufacturerNumber': 'EEEE11' }

result = services.update_document(reviews_collection, filter, new_data)
```

```
if result:
    print(f"Matched: {result.matched_count}, Updated: {result.modified_count

### 5 ------------------------------------------------------------------

filter = { 'reviews_rating': { '$gt': 4 } }
new_data = { 'reviews_doRecommend': 'TRUE' }

result = services.update_document(reviews_collection, filter, new_data)

if result:
    print(f"Matched: {result.matched_count}, Updated: {result.modified_count
```

```
INFO:root:Updating document(s) matching filter '{'name': 'Kindle Paperwhit
e'}' in 'reviews'
INFO:root:Matched 39 document(s), updated 39 document(s).
INFO:root:Updating document(s) matching filter '{'manufacturer': 'Amazon'}'
in 'reviews'
Matched: 39, Updated: 39
```

```
INFO:root:Matched 837 document(s), updated 837 document(s).
INFO:root:Updating document(s) matching filter '{'reviews_date': ''}' in 're
views'
INFO:root:Matched 385 document(s), updated 380 document(s).
INFO:root:Updating document(s) matching filter '{'manufacturerNumber': 'D011
01'}' in 'reviews'
INFO:root:Matched 32 document(s), updated 32 document(s).
INFO:root:Updating document(s) matching filter '{'reviews_rating': {'$gt':
4}}' in 'reviews'
INFO:root:Matched 741 document(s), updated 387 document(s).
Matched: 837, Updated: 837
Matched: 385, Updated: 380
Matched: 32, Updated: 32
Matched: 741, Updated: 387
```

Document(s) read (all)

In [4]:
```
documents = services.read_all(reviews_collection)

print(f"Total documents fetched: {len(documents)}")
for doc in documents[:3]:
    print(f"{doc} \n\n")
```

```
INFO:root:Reading all documents from collection 'reviews'
```

Total documents fetched: 1602

{'_id': ObjectId('67903405d7c049ac59cdd3d2'), 'id': 'AVpe7AsMilAPnD_xQ78G', 'asins': 'B00QJDU3KY', 'brand': 'Amazon', 'categories': 'Amazon Devices,mazo n.co.uk', 'colors': '', 'dateAdded': '2016-03-08T20:21:53Z', 'dateUpdated': '2017-07-18T23:52:58Z', 'dimension': '169 mm x 117 mm x 9.1 mm', 'ean': '', 'keys': 'kindlepaperwhite/b00qjdu3ky', 'manufacturer': 'Azamon Co.', 'manufa cturerNumber': '', 'name': 'Kindle Paperwhite', 'prices': '[{"amountMax":13 9.99,"amountMin":139.99,"currency":"USD","dateAdded":"2017-07-18T23:52:58 Z","dateSeen":["2017-07-15T18:10:23.807Z","2016-03-16T00:00:00Z"],"isSal e":"false","merchant":"Amazon.com","shipping":"FREE Shipping.","sourceURLs": ["https://www.amazon.com/Kindle-Paperwhite-High-Resolution-Display-Built/dp/ B00QJDU3KY/ref=lp_6669702011_1_7/132-1677641-8459202?s=amazon-devices&ie=UTF 8&qid=1498832761&sr=1-7","http://www.amazon.com/Kindle-Paperwhite-High-Resol ution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":119.99,"amountMin":119.9 9,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:21:53Z","dat eSeen":["2016-01-29T00:00:00Z"],"isSale":"false","merchant":"Amazon EU Sar l","shipping":"free","sourceURLs":["http://www.amazon.co.uk/Kindle-Paperwhit e-Resolution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":139.99,"amountMi n":139.99,"condition":"new","currency":"CAD","dateAdded":"2016-03-08T20:21:5 3Z","dateSeen":["2016-01-11T00:00:00Z"],"isSale":"false","merchant":"Amazo n","shipping":"free","sourceURLs":["http://www.amazon.ca/dp/B00QJDU3KY"]}, {"amountMax":119.99,"amountMin":119.99,"currency":"USD","dateAdded":"2016-0 3-08T20:21:53Z","dateSeen":["2016-03-12T00:00:00Z"],"isSale":"true","merchan t":"Amazon.com","sourceURLs":["http://www.amazon.com/Kindle-Paperwhite-High- Resolution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":119.99,"amountMin":1 19.99,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:21:53 Z","dateSeen":["2015-11-15T00:00:00Z"],"isSale":"false","merchant":"Amazo n","shipping":"free","sourceURLs":["http://www.amazon.co.uk/All-New-Kindle-P aperwhite-Resolution-Display/dp/B00QJDU3KY"]},{"amountMax":17.99,"amountMi n":17.99,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:21:53 Z","dateSeen":["2016-01-29T00:00:00Z"],"isSale":"false","merchant":"Amazon E U Sarl","shipping":"free","sourceURLs":["http://www.amazon.co.uk/Kindle-Pape rwhite-Resolution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":17.99,"amount Min":17.99,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:2 1:53Z","dateSeen":["2015-11-15T00:00:00Z"],"isSale":"false","merchant":"Amaz on","shipping":"free","sourceURLs":["http://www.amazon.co.uk/All-New-Kindle- Paperwhite-Resolution-Display/dp/B00QJDU3KY"]},{"amountMax":139.00,"amountMi n":139.00,"condition":"new","currency":"CAD","dateAdded":"2016-03-08T20:21:5 3Z","dateSeen":["2015-07-06T05:00:00Z"],"isSale":"false","merchant":"Amazo n.ca","shipping":"free","sourceURLs":["http://www.amazon.ca/dp/B00QJDU3K Y"]}]', 'reviews_date': '2015-08-08T00:00:00.000Z', 'reviews_doRecommend': ' TRUE', 'reviews_numHelpful': 139, 'reviews_rating': 5, 'reviews_sourceURLs': 'https://www.amazon.com/Kindle-Paperwhite-High-Resolution-Display-Built/dp/B 00QJDU3KY/ref=lp_6669702011_1_7/132-1677641-8459202?s=amazon-devices&ie=UTF8 &qid=1498832761&sr=1-7', 'reviews_text': "I initially had trouble deciding b etween the paperwhite and the voyage because reviews more or less said the s ame thing: the paperwhite is great, but if you have spending money, go for t he voyage.Fortunately, I had friends who owned each, so I ended up buying th e paperwhite on this basis: both models now have 300 ppi, so the 80 dollar j ump turns out pricey the voyage's page press isn't always sensitive, and if you are fine with a specific setting, you don't need auto light adjustmen t).It's been a week and I am loving my paperwhite, no regrets! The touch scr een is receptive and easy to use, and I keep the light at a specific setting regardless of the time of day. (In any case, it's not hard to change the set ting either, as you'll only be changing the light level at a certain time of day, not every now and then while reading).Also glad that I went for the int

ernational shipping option with Amazon. Extra expense, but delivery was on time, with tracking, and I didnt need to worry about customs, which I may have if I used a third party shipping service.", 'reviews_title': 'Paperwhite voyage, no regrets!', 'reviews_userCity': '', 'reviews_userProvince': '', 'reviews_username': 'Cristina M', 'sizes': '', 'upc': '', 'weight': '300 grams'}

{'_id': ObjectId('67903405d7c049ac59cdd3d3'), 'id': 'AVpe7AsMilAPnD_xQ78G', 'asins': 'B00QJDU3KY', 'brand': 'Amazon', 'categories': 'Amazon Devices,mazon.co.uk', 'colors': '', 'dateAdded': '2016-03-08T20:21:53Z', 'dateUpdated': '2017-07-18T23:52:58Z', 'dimension': '169 mm x 117 mm x 9.1 mm', 'ean': '', 'keys': 'kindlepaperwhite/b00qjdu3ky', 'manufacturer': 'Azamon Co.', 'manufacturerNumber': '', 'name': 'Kindle Paperwhite', 'prices': '[{"amountMax":139.99,"amountMin":139.99,"currency":"USD","dateAdded":"2017-07-18T23:52:58Z","dateSeen":["2017-07-15T18:10:23.807Z","2016-03-16T00:00:00Z"],"isSale":"false","merchant":"Amazon.com","shipping":"FREE Shipping.","sourceURLs":["https://www.amazon.com/Kindle-Paperwhite-High-Resolution-Display-Built/dp/B00QJDU3KY/ref=lp_6669702011_1_7/132-1677641-8459202?s=amazon-devices&ie=UTF8&qid=1498832761&sr=1-7","http://www.amazon.com/Kindle-Paperwhite-High-Resolution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":119.99,"amountMin":119.99,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2016-01-29T00:00:00Z"],"isSale":"false","merchant":"Amazon EU Sarl","shipping":"free","sourceURLs":["http://www.amazon.co.uk/Kindle-Paperwhite-Resolution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":139.99,"amountMin":139.99,"condition":"new","currency":"CAD","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2016-01-11T00:00:00Z"],"isSale":"false","merchant":"Amazon","shipping":"free","sourceURLs":["http://www.amazon.ca/dp/B00QJDU3KY"]},{"amountMax":119.99,"amountMin":119.99,"currency":"USD","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2016-03-12T00:00:00Z"],"isSale":"true","merchant":"Amazon.com","sourceURLs":["http://www.amazon.com/Kindle-Paperwhite-High-Resolution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":119.99,"amountMin":119.99,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2015-11-15T00:00:00Z"],"isSale":"false","merchant":"Amazon","shipping":"free","sourceURLs":["http://www.amazon.co.uk/All-New-Kindle-Paperwhite-Resolution-Display/dp/B00QJDU3KY"]},{"amountMax":17.99,"amountMin":17.99,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2016-01-29T00:00:00Z"],"isSale":"false","merchant":"Amazon EU Sarl","shipping":"free","sourceURLs":["http://www.amazon.co.uk/Kindle-Paperwhite-Resolution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":17.99,"amountMin":17.99,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2015-11-15T00:00:00Z"],"isSale":"false","merchant":"Amazon","shipping":"free","sourceURLs":["http://www.amazon.co.uk/All-New-Kindle-Paperwhite-Resolution-Display/dp/B00QJDU3KY"]},{"amountMax":139.00,"amountMin":139.00,"condition":"new","currency":"CAD","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2015-07-06T05:00:00Z"],"isSale":"false","merchant":"Amazon.ca","shipping":"free","sourceURLs":["http://www.amazon.ca/dp/B00QJDU3KY"]}]', 'reviews_date': '2015-09-01T00:00:00.000Z', 'reviews_doRecommend': 'TRUE', 'reviews_numHelpful': 126, 'reviews_rating': 5, 'reviews_sourceURLs': 'https://www.amazon.com/Kindle-Paperwhite-High-Resolution-Display-Built/dp/B00QJDU3KY/ref=lp_6669702011_1_7/132-1677641-8459202?s=amazon-devices&ie=UTF8&qid=1498832761&sr=1-7', 'reviews_text': "Allow me to preface this with a little history. I am (was) a casual reader who owned a Nook Simple Touch from 2011. I've read the Harry Potter series, Girl with the Dragon Tattoo series, 1984, Brave New World, and a few other key titles. Fair to say my Nook did not get as much use as many others may have gotten from theirs.Fast forward t

o today. I have had a full week with my new Kindle Paperwhite and I have to admit, I'm in love. Not just with the Kindle, but with reading all over again! Now let me relate this review, love, and reading all back to the Kindle. The investment of 139.00 is in the experience you will receive when you buy a Kindle. You are not simply paying for a screen there is an entire experience included in buying from Amazon.I have been reading The Hunger Games trilogy and shall be moving onto the Divergent series soon after. Here is the thing with the Nook that hindered me for the past 4 years: I was never inspired to pick it up, get it into my hands, and just dive in. There was never that feeling of oh man, reading on this thing is so awesome. However, with my Paperwhite, I now have that feeling! That desire is back and I simply adore my Kindle. If you are considering purchasing one, stop thinking about it simply go for it. After a full week, 3 downloaded books, and a ton of reading, I still have half of my battery left as well.Make yourself happy. Inspire the reader inside of you.", 'reviews_title': 'One Simply Could Not Ask For More', 'reviews_userCity': '', 'reviews_userProvince': '', 'reviews_username': 'Ricky', 'sizes': '', 'upc': '', 'weight': '300 grams'}

{'_id': ObjectId('67903405d7c049ac59cdd3d4'), 'id': 'AVpe7AsMilAPnD_xQ78G', 'asins': 'B00QJDU3KY', 'brand': 'Amazon', 'categories': 'Amazon Devices,mazon.co.uk', 'colors': '', 'dateAdded': '2016-03-08T20:21:53Z', 'dateUpdated': '2017-07-18T23:52:58Z', 'dimension': '169 mm x 117 mm x 9.1 mm', 'ean': '', 'keys': 'kindlepaperwhite/b00qjdu3ky', 'manufacturer': 'Azamon Co.', 'manufacturerNumber': '', 'name': 'Kindle Paperwhite', 'prices': '[{"amountMax":139.99,"amountMin":139.99,"currency":"USD","dateAdded":"2017-07-18T23:52:58Z","dateSeen":["2017-07-15T18:10:23.807Z","2016-03-16T00:00:00Z"],"isSale":"false","merchant":"Amazon.com","shipping":"FREE Shipping.","sourceURLs":["https://www.amazon.com/Kindle-Paperwhite-High-Resolution-Display-Built/dp/B00QJDU3KY/ref=lp_6669702011_1_7/132-1677641-8459202?s=amazon-devices&ie=UTF8&qid=1498832761&sr=1-7","http://www.amazon.com/Kindle-Paperwhite-High-Resolution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":119.99,"amountMin":119.99,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2016-01-29T00:00:00Z"],"isSale":"false","merchant":"Amazon EU Sarl","shipping":"free","sourceURLs":["http://www.amazon.co.uk/Kindle-Paperwhite-Resolution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":139.99,"amountMin":139.99,"condition":"new","currency":"CAD","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2016-01-11T00:00:00Z"],"isSale":"false","merchant":"Amazon","shipping":"free","sourceURLs":["http://www.amazon.ca/dp/B00QJDU3KY"]},{"amountMax":119.99,"amountMin":119.99,"currency":"USD","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2016-03-12T00:00:00Z"],"isSale":"true","merchant":"Amazon.com","sourceURLs":["http://www.amazon.com/Kindle-Paperwhite-High-Resolution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":119.99,"amountMin":119.99,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2015-11-15T00:00:00Z"],"isSale":"false","merchant":"Amazon","shipping":"free","sourceURLs":["http://www.amazon.co.uk/All-New-Kindle-Paperwhite-Resolution-Display/dp/B00QJDU3KY"]},{"amountMax":17.99,"amountMin":17.99,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2016-01-29T00:00:00Z"],"isSale":"false","merchant":"Amazon EU Sarl","shipping":"free","sourceURLs":["http://www.amazon.co.uk/Kindle-Paperwhite-Resolution-Display-Built-/dp/B00QJDU3KY"]},{"amountMax":17.99,"amountMin":17.99,"condition":"new","currency":"EUR","dateAdded":"2016-03-08T20:21:53Z","dateSeen":["2015-11-15T00:00:00Z"],"isSale":"false","merchant":"Amazon","shipping":"free","sourceURLs":["http://www.amazon.co.uk/All-New-Kindle-Paperwhite-Resolution-Display/dp/B00QJDU3KY"]},{"amountMax":139.00,"amountMin":139.00,"condition":"new","currency":"CAD","dateAdded":"2016-03-08T20:21:5

3Z","dateSeen":["2015-07-06T05:00:00Z"],"isSale":"false","merchant":"Amazo
n.ca","shipping":"free","sourceURLs":["http://www.amazon.ca/dp/B00QJDU3K
Y"]}]', 'reviews_date': '2015-07-20T00:00:00.000Z', 'reviews_doRecommend': '
', 'reviews_numHelpful': 69, 'reviews_rating': 4, 'reviews_sourceURLs': 'htt
ps://www.amazon.com/Kindle-Paperwhite-High-Resolution-Display-Built/dp/B00QJ
DU3KY/ref=lp_6669702011_1_7/132-1677641-8459202?s=amazon-devices&ie=UTF8&qid
=1498832761&sr=1-7', 'reviews_text': "I am enjoying it so far. Great for rea
ding. Had the original Fire since 2012. The Fire used to make my eyes hurt i
f I read too long. Haven't experienced that with the Paperwhite yet.", 'revi
ews_title': 'Great for those that just want an e-reader', 'reviews_userCity'
: '', 'reviews_userProvince': '', 'reviews_username': 'Tedd Gardiner', 'size
s': '', 'upc': '', 'weight': '300 grams'}

Document(s) filtered read

```
In [32]:  filter = { 'manufacturer': 'Azamon Co.' }
          result = services.filtered_read(reviews_collection, filter)

          # if result:
          #     for doc in result:
          #      print(f"{doc} \n\n")
```

```
INFO:root:Filtering document(s) matching filter '{'manufacturer': 'Azamon C
o.'}' in 'reviews'
INFO:root:Found 801 document(s).
```

Document(s) deletion

```
In [6]:  filter = { 'id': 'AVpe7AsMilAPnD_bDAGEG' }

         result = services.delete_document(reviews_collection, filter)

         if result:
             print(f"Removed: {result.deleted_count}")

         filter = { 'reviews_doRecommend': 'FALSE' }

         result = services.delete_document(reviews_collection, filter)

         if result:
             print(f"Removed: {result.deleted_count}")
```

```
INFO:root:Deleting document(s) matching filter '{'id': 'AVpe7AsMilAPnD_bDAGE
G'}' in 'reviews'
INFO:root:Removed 1 document(s).
INFO:root:Deleting document(s) matching filter '{'reviews_doRecommend': 'FAL
SE'}' in 'reviews'
INFO:root:Removed 35 document(s).
Removed: 1
Removed: 35
```

Query with operators

Reviews with 980 or more 'Helpful' votes from other people

In [33]:
```python
filter = ( { 'reviews_numHelpful': { '$gt': 980 } } )
result = services.filtered_read(reviews_collection, filter)

# if result:
#     for doc in result:
#      print(f"{doc} \n\n")
```

INFO:root:Filtering document(s) matching filter '{'reviews_numHelpful': {'$gt': 980}}' in 'reviews'
INFO:root:Found 2 document(s).

Reviews with rating equals to 5

In [8]:
```python
filter = ( { 'reviews_rating': { '$eq': 5 } } )
result = services.filtered_read(reviews_collection, filter)

# if result:
#     for doc in result:
#      print(f"{doc} \n\n")
```

INFO:root:Filtering document(s) matching filter '{'reviews_rating': {'$eq': 5}}' in 'reviews'
INFO:root:Found 741 document(s).

Searching for reviews with ratings greater than 4 and lesser than 5

In [34]:
```python
filter = (
    {'$and':
                [
        { 'reviews_rating': { '$gt': 4 } },
        { 'reviews_rating': { '$lt': 5 } }
                ]
        }
)
result = services.filtered_read(reviews_collection, filter)

# if result:
#     for doc in result:
#      print(f"{doc} \n\n")
```

INFO:root:Filtering document(s) matching filter '{'$and': [{'reviews_rating': {'$gt': 4}}, {'reviews_rating': {'$lt': 5}}]}' in 'reviews'
INFO:root:Found 0 document(s).

Finding all products with the manufacturer number in the description

In [35]:
```python
filter = ( { 'manufacturerNumber': { '$ne': '' } } )
result = services.filtered_read(reviews_collection, filter)
```

```
# if result:
#    for doc in result:
#      print(f"{doc} \n\n")
```

INFO:root:Filtering document(s) matching filter '{'manufacturerNumber': {'$ne': ''}}' in 'reviews'
INFO:root:Found 867 document(s).

Query with aggregation operators

Searching for documents where reviewers do not recommend it

In [21]:
```python
pipeline = ([
    { '$project': { 'reviews_doRecommend': 1 } },
    { '$match': { 'reviews_doRecommend': { '$eq': 'TRUE' } } }
])
result = services.aggregate(reviews_collection, pipeline)

# if result:
#    for doc in result:
#      print(f"{doc} \n\n")
```

INFO:root:Processing document(s) mathich pipeline '[{'$project': {'reviews_doRecommend': 1}}, {'$match': {'reviews_doRecommend': {'$eq': 'TRUE'}}}]' in 'reviews'
INFO:root:Found 890 document(s).

Finding how many reviews recommending the product are in the database

In [22]:
```python
pipeline = ([
    { '$project': { 'reviews_doRecommend': 1 } },
    { '$match': { 'reviews_doRecommend': { '$eq': 'TRUE' } } },
    { '$group': { '_id': 'null', 'totalMatched': { '$sum': 1 } } }
])
result = services.aggregate(reviews_collection, pipeline)

if result:
    for doc in result:
        print(f"{doc} \n\n")
```

INFO:root:Processing document(s) mathich pipeline '[{'$project': {'reviews_doRecommend': 1}}, {'$match': {'reviews_doRecommend': {'$eq': 'TRUE'}}}, {'$group': {'_id': 'null', 'totalMatched': {'$sum': 1}}}]' in 'reviews'
INFO:root:Found 1 document(s).
{'_id': 'null', 'totalMatched': 890}

Sorting reviews using number of Helpful votes

In [24]:
```python
pipeline = ([
  { '$project': { 'reviews_numHelpful': 1, 'reviews_rating': 1, 'reviews_tit
  { '$match': { 'reviews_numHelpful': { '$ne': '' } } },
  { '$sort': { 'reviews_numHelpful': -1 } }
```

```
    ])
    result = services.aggregate(reviews_collection, pipeline)

    if result:
        for doc in result[:5]:
         print(f"{doc} \n\n")
```

```
INFO:root:Processing document(s) mathich pipeline '[{'$project': {'reviews_n
umHelpful': 1, 'reviews_rating': 1, 'reviews_title': 1}}, {'$match': {'revie
ws_numHelpful': {'$ne': ''}}}, {'$sort': {'reviews_numHelpful': -1}}]' in 'r
eviews'
INFO:root:Found 865 document(s).
{'_id': ObjectId('67903405d7c049ac59cdd690'), 'reviews_numHelpful': 997, 're
views_rating': 4, 'reviews_title': ''}


{'_id': ObjectId('67903405d7c049ac59cdd6d9'), 'reviews_numHelpful': 988, 're
views_rating': 5, 'reviews_title': ''}


{'_id': ObjectId('67903405d7c049ac59cdd601'), 'reviews_numHelpful': 975, 're
views_rating': 5, 'reviews_title': 'HD Fire 6 is great for the price! 3,'}


{'_id': ObjectId('67903405d7c049ac59cdd6dd'), 'reviews_numHelpful': 971, 're
views_rating': 5, 'reviews_title': ''}


{'_id': ObjectId('67903405d7c049ac59cdd6cf'), 'reviews_numHelpful': 966, 're
views_rating': 5, 'reviews_title': 'Best 50 I ever spent!!!! 1,'}
```

Showing the quantity of products by year of addition to the site

```
In [25]:  pipeline = ([
              {
              '$project': {
                'yearAdded': { '$year': { '$dateFromString': { 'dateString': "$dateAdd
              }
            },
            {
              '$group': {
                '_id': "$yearAdded",
                'productCount': { '$sum': 1 }
              }
            },
            {
              '$sort': { '_id': 1 }
            }
          ])
          result = services.aggregate(reviews_collection, pipeline)

          if result:
              for doc in result:
               print(f"{doc} \n\n")
```

```
INFO:root:Processing document(s) mathich pipeline '[{'$project': {'yearAdde
d': {'$year': {'$dateFromString': {'dateString': '$dateAdded'}}}}}, {'$grou
p': {'_id': '$yearAdded', 'productCount': {'$sum': 1}}}, {'$sort': {'_id':
1}}]' in 'reviews'
INFO:root:Found 5 document(s).
{'_id': 2015, 'productCount': 524}


{'_id': 2016, 'productCount': 201}


{'_id': 2017, 'productCount': 837}


{'_id': 2022, 'productCount': 2}


{'_id': 2023, 'productCount': 2}
```

Data Analysis

Setup

```
In [36]:  import pandas as pd
          import matplotlib.pyplot as plt
          import seaborn as sns
          import numpy as np

          filter = {}
          projection = { '_id': 0 }
```

```
data = list(services.filtered_read(reviews_collection, filter, projection))
df = pd.DataFrame(data)
```

```
INFO:root:Filtering document(s) matching filter '{}' in 'reviews'
INFO:root:Found 1576 document(s).
```

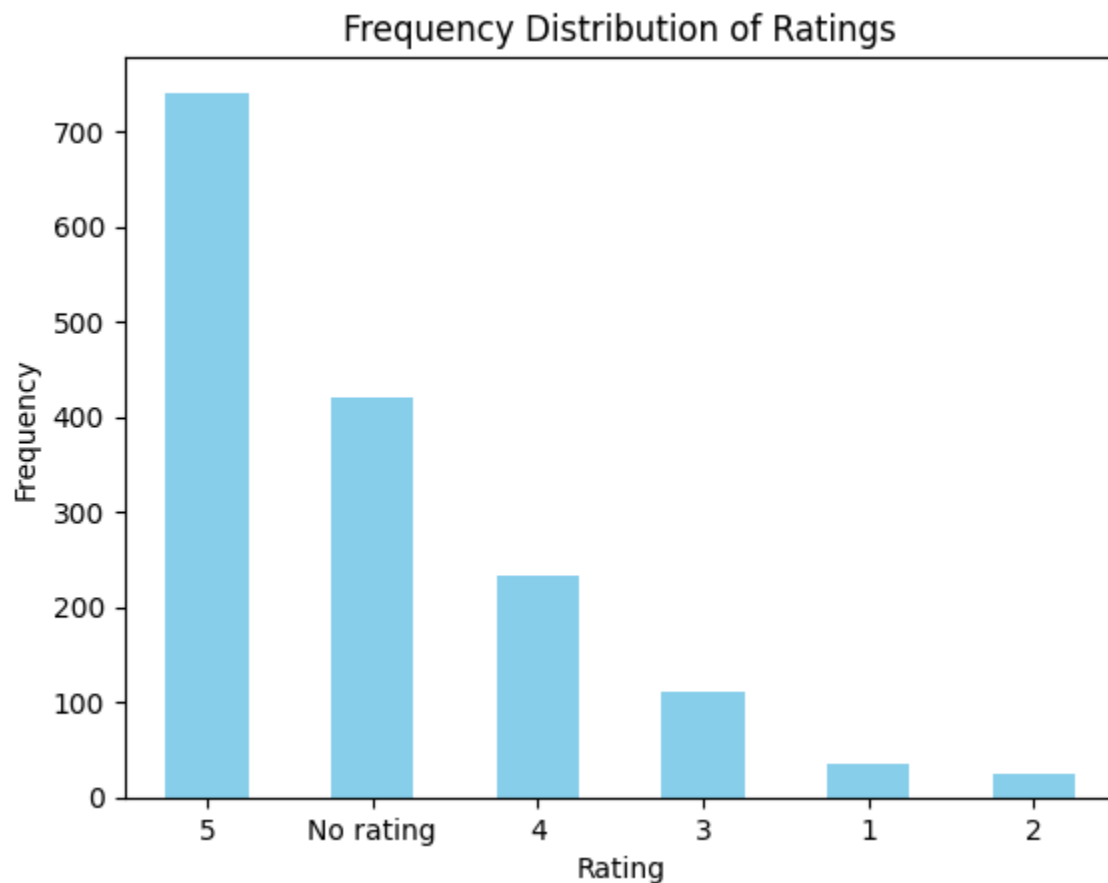### Rating values frequency distribution

In [16]:
```
df['reviews_rating'] = df['reviews_rating'].replace('', 'No rating')

rating_counts = df['reviews_rating'].value_counts()

print(rating_counts)

rating_counts.plot(kind='bar', title='Frequency Distribution of Ratings', co
plt.xlabel('Rating')
plt.ylabel('Frequency')
plt.xticks(rotation=0)
plt.show()
```

```
reviews_rating
5            741
No rating    420
4            233
3            112
1             35
2             25
Name: count, dtype: int64
```


Frequency Distribution of Ratings

Overview of metrics and types

In [28]:
```python
pd.set_option('display.max_columns', 20)
pd.set_option('display.max_colwidth', 125)
pd.set_option('display.float_format', lambda x: f'{x:.2f}')

columns_of_interest = ['reviews_rating', 'dateAdded', 'dateUpdated', 'review

df['reviews_rating'] = pd.to_numeric(df['reviews_rating'], errors='coerce')
df['reviews_doRecommend'] = pd.to_numeric(df['reviews_doRecommend'], errors=
df['reviews_numHelpful'] = pd.to_numeric(df['reviews_numHelpful'], errors='c

numeric_cols = df[columns_of_interest].select_dtypes(include=[np.number])

detailed_stats = pd.DataFrame({
    'avg (mean)': numeric_cols.mean(),
    'std (standard deviation)': numeric_cols.std(),
    '25% (1st quartile)': numeric_cols.quantile(0.25),
    '50% (median)': numeric_cols.median(),
    '75% (3rd quartile)': numeric_cols.quantile(0.75),
})

print("\nDetailed Numeric Statistics:")
print(detailed_stats)
```

```
Detailed Numeric Statistics:
                     avg (mean)  std (standard deviation)  25% (1st quartil
e)  \
reviews_rating             4.41                      0.97                 4.0
0
reviews_doRecommend         NaN                       NaN                  Na
N
reviews_numHelpful        86.96                    200.37                 0.0
0

                     50% (median)  75% (3rd quartile)
reviews_rating               5.00                5.00
reviews_doRecommend           NaN                 NaN
reviews_numHelpful           0.00               36.00
```

Number of items added to amazon per year

In [29]:
```python
df['yearAdded'] = pd.to_datetime(df['dateAdded']).dt.year
item_year_distribution = df.groupby(['yearAdded', 'name']).size().unstack(fi

item_year_distribution = item_year_distribution.loc[:, (item_year_distributi
item_year_distribution = item_year_distribution[(item_year_distribution > 10

plt.figure(figsize=(16, 2))
sns.heatmap(item_year_distribution, annot=False, cmap='RdYlGn', cbar_kws={'l
plt.title('Heatmap of Item Sales Over Time')
plt.xlabel('Item')
plt.ylabel('Year')
plt.show()
```

Heatmap of Item Sales Over Time

In [ ]: