

```
In [1]: # Fill in student ID and name
#
student_id = "223212228"
student_first_last_name = "Krystal_Nguyen"
print(student_id, student_first_last_name)
```

223212228 Krystal_Nguyen

```
In [2]: """
        Firebase Realtime database demonstration.

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        Deakin University, Australia.
        """

# Install libraris, if not yet.
! pip install firebase_admin pandas

import firebase_admin

databaseURL = 'https://data-83b30-default-rtdb.firebaseio.com/'
cred_obj = firebase_admin.credentials.Certificate(
    'data-83b30-firebase-adminsdk-bagyf-e99b2a2ee3.json'
)
default_app = firebase_admin.initialize_app(cred_obj, {
    'databaseURL': databaseURL
})
```

Requirement already satisfied: firebase_admin in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (6.5.0)

Requirement already satisfied: pandas in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (2.2.2)

Requirement already satisfied: google-api-python-client>=1.7.8 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from firebase_admin) (2.86.0)

Requirement already satisfied: google-cloud-firestore>=2.9.1 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from firebase_admin) (2.17.0)

Requirement already satisfied: google-cloud-storage>=1.37.1 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from firebase_admin) (2.14.0)

Requirement already satisfied: pyjwt[crypto]>=2.5.0 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from firebase_admin) (2.8.0)

Requirement already satisfied: cachecontrol>=0.12.6 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from firebase_admin) (0.14.0)

Requirement already satisfied: google-api-core[grpc]<3.0.0dev,>=1.22.1 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from firebase_admin) (2.11.0)

Requirement already satisfied: tzdata>=2022.7 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from pandas) (2023.3)

Requirement already satisfied: pytz>=2020.1 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from pandas) (2024.1)

Requirement already satisfied: python-dateutil>=2.8.2 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from pandas) (2.9.0.post0)

Requirement already satisfied: numpy>=1.22.4 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from pandas) (1.26.4)

Requirement already satisfied: msgpack<2.0.0,>=0.5.2 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from cachecontrol>=0.12.6->firebase_admin) (1.0.8)

Requirement already satisfied: requests>=2.16.0 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from cachecontrol>=0.12.6->firebase_admin) (2.32.3)

Requirement already satisfied: googleapis-common-protos<2.0dev,>=1.56.2 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-api-core[grpc]<3.0.0dev,>=1.22.1->firebase_admin) (1.59.0)

Requirement already satisfied: protobuf!=3.20.0,!<3.20.1,!<4.21.0,!<4.21.1,!<4.21.2,!<4.21.3,!<4.21.4,!<4.21.5,<5.0.0dev,>=3.19.5 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-api-core[grpc]<3.0.0dev,>=1.22.1->firebase_admin) (4.23.1)

Requirement already satisfied: google-auth<3.0dev,>=2.14.1 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-api-core[grpc]<3.0.0dev,>=1.22.1->firebase_admin) (2.33.0)

Requirement already satisfied: grpcio-status<2.0dev,>=1.33.2 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-api-core[grpc]<3.0.0dev,>=1.22.1->firebase_admin) (1.62.3)

Requirement already satisfied: grpcio<2.0dev,>=1.33.2 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-api-core[grpc]<3.0.0dev,>=1.22.1->firebase_admin) (1.65.4)

Requirement already satisfied: google-auth-http<2.0dev,>=0.1.0 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-api-python-client>=1.7.8->firebase_admin) (0.1.0)

Requirement already satisfied: httplib2<1dev,>=0.15.0 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-api-python-client>=1.7.8->firebase_admin) (0.22.0)

Requirement already satisfied: uritemplate<5,>=3.0.1 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-api-python-client>=1.7.8->firebase_admin) (4.1.1)

Requirement already satisfied: proto-plus<2.0dev,>=1.22.0 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-cloud-firestore>=2.9.1->firebase_admin) (1.24.0)

Requirement already satisfied: google-cloud-core<3.0.0dev,>=1.4.1 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-cloud-firestore>=2.9.1->firebase_admin) (2.4.1)

Requirement already satisfied: google-resumable-media>=2.6.0 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-cloud-storage>=1.37.1->firebase_admin) (2.7.2)

Requirement already satisfied: google-crc32c<2.0dev,>=1.0 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-cloud-storage>=1.37.1->firebase_admin) (1.5.0)

Requirement already satisfied: cryptography>=3.4.0 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from pyjwt[crypto]>=2.5.0->firebase_admin) (42.0.5)

Requirement already satisfied: six>=1.5 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)

Requirement already satisfied: cffi>=1.12 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from cryptography>=3.4.0->pyjwt[crypto]>=2.5.0->firebase_admin) (1.16.0)

Requirement already satisfied: cachetools<6.0,>=2.0.0 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-auth<3.0dev,>=2.14.1->google-api-core[grpc]<3.0.0dev,>=1.22.1->firebase_admin) (5.3.0)

Requirement already satisfied: rsa<5,>=3.1.4 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-auth<3.0dev,>=2.14.1->google-api-core[grpc]<3.0.0dev,>=1.22.1->firebase_admin) (4.9)

Requirement already satisfied: pyasn1-modules>=0.2.1 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from google-auth<3.0dev,>=2.14.1->google-api-core[grpc]<3.0.0dev,>=1.22.1->firebase_admin) (0.4.0)

Requirement already satisfied: pyparsing!=3.0.0,!<3.0.1,!<3.0.2,!<3.0.3,<4,>=2.4.2 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from httplib2<1dev,>=0.15.0->google-api-python-client>=1.7.8->firebase_admin) (3.1.2)

Requirement already satisfied: certifi>=2017.4.17 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from requests>=2.16.0->cachecontrol>=0.12.6->firebase_admin) (2024.6.2)

Requirement already satisfied: charset-normalizer<4,>=2 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from requests>=2.16.0->cachecontrol>=0.12.6->firebase_admin) (2.0.4)

Requirement already satisfied: urllib3<3,>=1.21.1 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from requests>=2.16.0->cachecontrol>=0.12.6->firebase_admin) (2.2.1)

Requirement already satisfied: idna<4,>=2.5 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from requests>=2.16.0->cachecontrol>=0.12.6->firebase_admin) (3.7)

Requirement already satisfied: pycparser in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from cffi>=1.12->cryptography>=3.4.0->pyjwt[crypto]>=2.5.0->firebase_admin) (2.21)

Requirement already satisfied: pyasn1<0.7.0,>=0.4.6 in /Users/d.o.npat/anaconda3/lib/python3.10/site-packages (from pyasn1-modules>=0.2.1->google-auth<3.0dev,>=2.14.1->google-api-core[grpc]<3.0.0dev,>=1.22.1->firebase_admin) (0.6.0)

```
In [3]: from firebase_admin import db
```

```
# A reference point is always needed to be set
```

```

# before any operation is carried out on a database.
#
ref = db.reference("/")

# JSON format data (key/value pair)
data = { # Outer {} contains inner data structure
    "Book1":
        {
            "Title": "The Fellowship of the Ring",
            "Author": "J.R.R. Tolkien",
            "Genre": "Epic fantasy",
            "Price": 100
        },
    "Book2":
        {
            "Title": "The Two Towers",
            "Author": "J.R.R. Tolkien",
            "Genre": "Epic fantasy",
            "Price": 100
        },
    "Book3":
        {
            "Title": "The Return of the King",
            "Author": "J.R.R. Tolkien",
            "Genre": "Epic fantasy",
            "Price": 100
        },
    "Book4":
        {
            "Title": "Brida",
            "Author": "Paulo Coelho",
            "Genre": "Fiction",
            "Price": 100
        }
    }

# JSON format data is set (overwritten) to the reference
# point set at /, which is the root node.
#
ref.set(data)

```

In [4]: `ref = db.reference("/") # set ref point`

```

# query all data under the ref
books = ref.get()
print(books)
print(type(books))

# print each item separately
for key, value in books.items():
    print(f"{key}: {value}")

# Query /Book1
ref = db.reference("/Book1")
books = ref.get()
print(books)

```

```

{'Book1': {'Author': 'J.R.R. Tolkien', 'Genre': 'Epic fantasy', 'Price': 100, 'Title': 'The Fellowship of the Ring'}, 'Book2': {'Author': 'J.R.R. Tolkien', 'Genre': 'Epic fantasy', 'Price': 100, 'Title': 'The Two Towers'}, 'Book3': {'Author': 'J.R.R. Tolkien', 'Genre': 'Epic fantasy', 'Price': 100, 'Title': 'The Return of the King'}, 'Book4': {'Author': 'Paulo Coelho', 'Genre': 'Fiction', 'Price': 100, 'Title': 'Brida'}}
<class 'dict'>
Book1: {'Author': 'J.R.R. Tolkien', 'Genre': 'Epic fantasy', 'Price': 100, 'Title': 'The Fellowship of the Ring'}
Book2: {'Author': 'J.R.R. Tolkien', 'Genre': 'Epic fantasy', 'Price': 100, 'Title': 'The Two Towers'}
Book3: {'Author': 'J.R.R. Tolkien', 'Genre': 'Epic fantasy', 'Price': 100, 'Title': 'The Return of the King'}
Book4: {'Author': 'Paulo Coelho', 'Genre': 'Fiction', 'Price': 100, 'Title': 'Brida'}
{'Author': 'J.R.R. Tolkien', 'Genre': 'Epic fantasy', 'Price': 100, 'Title': 'The Fellowship of the Ring'}

```

In [5]: `# Write using push() function`
`# Note that a set() is called on top of push()`
`#`

```

ref = db.reference("/")
ref.set({
    "Books":
        {
            "Best_Sellers": -1
        }
})

ref = db.reference("/Books/Best_Sellers")

for key, value in data.items():

```

```
ref.push().set(value)
```

```
In [6]: # Update data
#
# Requirement: The price of the books by
# J. R. R. Tolkien is reduced to 80 units to
# offer a discount.
#
ref = db.reference("/Books/Best_Sellers/")
best_sellers = ref.get()
print(best_sellers)
for key, value in best_sellers.items():
    if(value["Author"] == "J.R.R. Tolkien"):
        value["Price"] = 90
        ref.child(key).update({"Price":80})
```

```
{'-03yfGMyzzof2g-bCBiV': {'Author': 'J.R.R. Tolkien', 'Genre': 'Epic fantasy', 'Price': 100, 'Title': 'The Fello
wship of the Ring'}, '-03yfGV7kGJ3JuIJg83q': {'Author': 'J.R.R. Tolkien', 'Genre': 'Epic fantasy', 'Price': 100,
'Title': 'The Two Towers'}, '-03yfGboh8Rz9hXIxUvx': {'Author': 'J.R.R. Tolkien', 'Genre': 'Epic fantasy', 'Price
': 100, 'Title': 'The Return of the King'}, '-03yfGjcVaUFGE18KXVx': {'Author': 'Paulo Coelho', 'Genre': 'Fiction
', 'Price': 100, 'Title': 'Brida'}}
```

```
In [7]: # Let's delete all best seller books
# with J.R.R. Tolkien as the author.
#
ref = db.reference("/Books/Best_Sellers")

for key, value in best_sellers.items():
    if(value["Author"] == "J.R.R. Tolkien"):
        ref.child(key).set({})
```

```
In [8]: # Delete all best_seller data.
#
ref = db.reference("/Books/Best_Sellers/")
best_sellers = ref.get()
print(best_sellers)
print(type(best_sellers))
```

```
{'-03yfGjcVaUFGE18KXVx': {'Author': 'Paulo Coelho', 'Genre': 'Fiction', 'Price': 100, 'Title': 'Brida'}}
<class 'dict'>
```

```
In [9]: ref = db.reference("/Books/Best_Sellers")
ref.set({})
```

```
In [ ]:
```

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