[3-3. 데이터베이스로부터 데이터 쓰기]

1. cursor 객체 속성 및 메서드

1-1. cursor 객체 속성

- description : 쿼리 결과의 컬럼에 대한 정보를 포함하는 튜플의 튜플입니다. 각 내부 튜플은 컬럼명, 유형 코드, 표시 길이, 내부 길이, 정밀도, 스케일, null 여부를 포함합니다.

- rowcount : 마지막으로 실행된 execute() 또는 executemany() 호출에 의해 영향을 받은 행의 수입니다. INSERT 또는 UPDATE 등에 의해 영향을 받은 데이터베이스의 행의 수를 의미합니다.

- lastrowid : 마지막으로 INSERT 연산을 통해 생성된 자동 증가 필드(auto-increment field)의 ID를 반환합니다. INSERT 쿼리가 없거나 테이블에 자동 증가 필드가 없는 경우 None을 반환합니다.

```python
from connector import Connector

with Connector() as conn:
    query = "SELECT * FROM cashflow_tbl WHERE deposit > 0;"
    conn.cursor.execute(query)
    print(f"description : {conn.cursor.description}")
    print(f"rowcount    : {conn.cursor.rowcount}")
    print(f"lastrowid   : {conn.cursor.lastrowid}")
    result = conn.cursor.fetchall()
```

```
description : [('id', 8, None, None, None, None, 0, 49699, 63), ('account_id', 254, None, None, None, None, 0, 4097, 255), ('dw_date', 10, None, None, None, None, 0, 4225, 63), ('category', 254, None, None, None, None, 0, 4097, 255), ('client', 254, None, None, None, None, 0, 4097, 255), ('deposit', 8, None, None, None, None, 0, 32801, 63), ('withdrawal', 8, None, None, None, None, 0, 32801, 63), ('description', 253, None, None, None, None, 1, 0, 255), ('created_at', 12, None, None, None, None, 0, 129, 63), ('deleted_at', 12, None, None, None, None, 1, 128, 63)]
rowcount    : 0
lastrowid   : 0
```

1-2. cursor 객체 메서드

- execute(query, params=None) : SQL 쿼리를 실행합니다. params는 쿼리에 바인딩할 파라미터를 포함할 수 있으며, 튜플, 리스트 또는 딕셔너리일 수 있습니다.

- executemany(query, seq_of_params) : 동일한 쿼리를 파라미터의 시퀀스에 대해 반복적으로 실행합니다. 대량 데이터 삽입 작업에 효과적입니다.

- fetchone() : 쿼리 결과로부터 다음 행을 반환합니다. 결과가 없으면 None을 반환합니다.

- fetchall() : 쿼리 결과의 모든 행을 한번에 가져옵니다. 모든 결과를 메모리에 로드하므로, 큰 결과 집합에서는 주의가 필요합니다.

- fetchmany(size=None) : 쿼리 결과에서 지정된 수(size)의 행을 반환합니다. size가 지정되지 않으면 1의 값이 사용됩니다.

1-3. cursor 객체의 fetchone() 메서드, fetchall() 메서드 사용하기

1-3-1. fetchall() 메서드

```python
In [ ]:  with Connector() as conn:
             query = "SELECT * FROM accounts_info;"
             conn.cursor.execute(query)
             result = conn.cursor.fetchall()
             print(result)
```

```
[{'id': 1, 'account_id': 'hana1234', 'bank_name': '하나은행', 'account_number': '12345-01-1234', 'account_holder': 'FC호텔', 'account_type': '보통예금', 'branch_name': '여의도점', 'account_alias': '매출계좌', 'description': '매출대금 입금계좌', 'opening_date': datetime.date(2024, 1, 2), 'closing_date': None, 'created_at': datetime.datetime(2024, 4, 10, 23, 33, 35), 'deleted_at': None}, {'id': 2, 'account_id': 'hana4321', 'bank_name': '하나은행', 'account_number': '12345-01-4321', 'account_holder': 'FC호텔', 'account_type': '보통예금', 'branch_name': '여의도점', 'account_alias': '운영계좌', 'description': '운영비용 지출 계좌', 'opening_date': datetime.date(2024, 1, 2), 'closing_date': None, 'created_at': datetime.datetime(2024, 4, 10, 23, 33, 35), 'deleted_at': None}, {'id': 3, 'account_id': 'shhn4567', 'bank_name': '신한은행', 'account_number': '54321-21-4567', 'account_holder': 'FC호텔', 'account_type': '정기예금', 'branch_name': '여의도점', 'account_alias': '정기예금', 'description': '10억원 1년 정기예금', 'opening_date': datetime.date(2024, 1, 2), 'closing_date': None, 'created_at': datetime.datetime(2024, 4, 10, 23, 33, 35), 'deleted_at': None}]
```

1-3-2. fetchone() 메서드

```python
with Connector() as conn:
    query = "SELECT * FROM accounts_info;"
    conn.cursor.execute(query)

    result = []
    row = conn.cursor.fetchone()
    while row is not None:
        result.append(row)
        row = conn.cursor.fetchone()
    print(result)
```

```
[{'id': 1, 'account_id': 'hana1234', 'bank_name': '하나은행', 'account_numb
er': '12345-01-1234', 'account_holder': 'FC호텔', 'account_type': '보통예
금', 'branch_name': '여의도점', 'account_alias': '매출계좌', 'description': '
매출대금 입금계좌', 'opening_date': datetime.date(2024, 1, 2), 'closing_dat
e': None, 'created_at': datetime.datetime(2024, 4, 10, 23, 33, 35), 'del
eted_at': None}, {'id': 2, 'account_id': 'hana4321', 'bank_name': '하나은
행', 'account_number': '12345-01-4321', 'account_holder': 'FC호텔', 'accou
nt_type': '보통예금', 'branch_name': '여의도점', 'account_alias': '운영계좌', '
description': '운영비용 지출 계좌', 'opening_date': datetime.date(2024, 1,
2), 'closing_date': None, 'created_at': datetime.datetime(2024, 4, 10, 2
3, 33, 35), 'deleted_at': None}, {'id': 3, 'account_id': 'shhn4567', 'ba
nk_name': '신한은행', 'account_number': '54321-21-4567', 'account_holder':
'FC호텔', 'account_type': '정기예금', 'branch_name': '여의도점', 'account_alia
s': '정기예금', 'description': '10억원 1년 정기예금', 'opening_date': datetime.
date(2024, 1, 2), 'closing_date': None, 'created_at': datetime.datetime(
2024, 4, 10, 23, 33, 35), 'deleted_at': None}]
```

2. execute() 메서드를 이용하여 INSERT 실행하기

2-1. INSERT 쿼리문 전체를 Execute 하기

```python
with Connector() as conn:
    query = """
        INSERT INTO cashflow_tbl (
            account_id, dw_date, category, client,
            deposit, withdrawal, description
        )
        VALUES (
            'shhn4567', '2024-02-02', '이자수입', '신한은행',
            4246575, 0, '정기예금 이자'
        );
    """
    conn.cursor.execute(query) # SQL 쿼리 실행
    conn.connection.commit() # 트랜잭션 내에서 실행된 모든 변경사항을 데이터베이스에 획
```

```python
In [ ]: with Connector() as conn:
            query = "SELECT * FROM cashflow_tbl WHERE dw_date='2024-02-02';"
            conn.cursor.execute(query)
            result = conn.cursor.fetchall()
            print(result)
```

```
[{'id': 113, 'account_id': 'shhn4567', 'dw_date': datetime.date(2024, 2,
2), 'category': '이자수입', 'client': '신한은행', 'deposit': 4246575, 'withdr
awal': 0, 'description': '정기예금 이자', 'created_at': datetime.datetime(20
24, 4, 13, 18, 40, 37), 'deleted_at': None}]
```

2-2. 플레이스 홀더를 사용하여 쿼리문 Execute 하기

- 쿼리문에 '%s'(플레이스 홀더)를 사용해서 SQL 쿼리문에 변수를 안전하게 바인딩할 수 있습니다.

- 쿼리 작성 : 쿼리문에서 변수가 들어갈 자리에 '%s'를 사용합니다. '%s'는 쿼리에 직접 값을 삽입하지 않고, 대신 변수를 받는 플레이스 홀더 역할을 합니다.

- 데이터 바인딩 : 쿼리 실행 시 '%s' 위치에 들어갈 변수를 튜플 또는 리스트로 제공합니다. 이 데이터는 쿼리를 실행할 때 적절히 삽입되어 실행됩니다.

- 쿼리 실행 : execute() 또는 executemany() 메서드의 첫번째 인자로 쿼리문이, 두번째 인자로 데이터가 들어갑니다.

```python
In [ ]: with Connector() as conn:
            query = """
                INSERT INTO cashflow_tbl (
                    account_id, dw_date, category, client,
                    deposit, withdrawal, description
                )
                VALUES (%s, %s, %s, %s, %s, %s, %s);
            """
            values = ['hana1234', '2024-02-01', '객실수입', '호텔스닷컴',
                      33000000, 0, '객실 매출']
            conn.cursor.execute(query, values) # SQL 쿼리 실행
            conn.connection.commit() # 트랜잭션 내에서 실행된 모든 변경사항을 데이터베이스에 획
```

```python
In [ ]: with Connector() as conn:
            query = "SELECT * FROM cashflow_tbl WHERE dw_date='2024-02-01';"
            conn.cursor.execute(query)
            result = conn.cursor.fetchall()
            print(result)
```

```
[{'id': 114, 'account_id': 'hana1234', 'dw_date': datetime.date(2024, 2,
1), 'category': '객실수입', 'client': '호텔스닷컴', 'deposit': 33000000, 'with
drawal': 0, 'description': '객실 매출', 'created_at': datetime.datetime(202
4, 4, 13, 18, 47, 25), 'deleted_at': None}]
```

2-3. executemany() 메서드 사용하기

```
In [ ]:  values = [
             ('hana1234', '2024-02-02', '객실수입', '호텔스넷', 25000000, 0, '객실 매출')
             ('hana1234', '2024-02-03', '객실수입', '호텔스닷컴', 30000000, 0, '객실 매출')
             ('hana1234', '2024-02-04', '객실수입', '호텔스넷', 25000000, 0, '객실 매출')
             ('hana1234', '2024-02-05', '객실수입', '호텔스닷컴', 31000000, 0, '객실 매출')
             ('hana1234', '2024-02-06', '객실수입', '호텔스넷', 25000000, 0, '객실 매출')
             ('hana1234', '2024-02-07', '객실수입', '호텔스닷컴', 31000000, 0, '객실 매출')
             ('hana1234', '2024-02-08', '객실수입', '호텔스넷', 27000000, 0, '객실 매출')
             ('hana1234', '2024-02-09', '객실수입', '호텔스닷컴', 25000000, 0, '객실 매출')
             ('hana1234', '2024-02-10', '객실수입', '호텔스넷', 32000000, 0, '객실 매출')
             ('hana1234', '2024-02-11', '객실수입', '호텔스닷컴', 35000000, 0, '객실 매출')
             ('hana1234', '2024-02-12', '객실수입', '호텔스넷', 33000000, 0, '객실 매출')
             ('hana1234', '2024-02-13', '객실수입', '호텔스닷컴', 24000000, 0, '객실 매출')
             ('hana1234', '2024-02-14', '객실수입', '호텔스넷', 22000000, 0, '객실 매출')
             ('hana1234', '2024-02-15', '객실수입', '호텔스닷컴', 25000000, 0, '객실 매출')
             ('hana1234', '2024-02-16', '객실수입', '호텔스넷', 28000000, 0, '객실 매출')
             ('hana1234', '2024-02-17', '객실수입', '호텔스닷컴', 25000000, 0, '객실 매출')
             ('hana1234', '2024-02-18', '객실수입', '호텔스넷', 27000000, 0, '객실 매출')
             ('hana1234', '2024-02-19', '객실수입', '호텔스닷컴', 29000000, 0, '객실 매출')
             ('hana1234', '2024-02-20', '객실수입', '호텔스넷', 28000000, 0, '객실 매출')
             ('hana1234', '2024-02-21', '객실수입', '호텔스닷컴', 31000000, 0, '객실 매출')
             ('hana1234', '2024-02-22', '객실수입', '호텔스넷', 25000000, 0, '객실 매출')
             ('hana1234', '2024-02-23', '객실수입', '호텔스닷컴', 30000000, 0, '객실 매출')
             ('hana1234', '2024-02-24', '객실수입', '호텔스넷', 31000000, 0, '객실 매출')
             ('hana1234', '2024-02-25', '객실수입', '호텔스닷컴', 25000000, 0, '객실 매출')
             ('hana1234', '2024-02-26', '객실수입', '호텔스넷', 30000000, 0, '객실 매출')
             ('hana1234', '2024-02-27', '객실수입', '호텔스닷컴', 32000000, 0, '객실 매출')
             ('hana1234', '2024-02-28', '객실수입', '호텔스넷', 27000000, 0, '객실 매출')
             ('hana1234', '2024-02-29', '객실수입', '호텔스닷컴', 32000000, 0, '객실 매출')
             ('hana4321', '2024-02-21', '급여', '종업원급여', 0, 170000000, '종업원급여')
             ('hana4321', '2024-02-07', '판매수수료', '호텔스넷', 0, 3750000, '객실판매수수')
             ('hana4321', '2024-02-13', '판매수수료', '호텔스넷', 0, 4600000, '객실판매수수')
             ('hana4321', '2024-02-19', '판매수수료', '호텔스넷', 0, 3850000, '객실판매수수')
             ('hana4321', '2024-02-25', '판매수수료', '호텔스넷', 0, 4200000, '객실판매수수')
             ('hana4321', '2024-02-29', '판매수수료', '호텔스넷', 0, 2850000, '객실판매수수')
             ('hana4321', '2024-02-07', '판매수수료', '호텔스닷컴', 0, 4700000, '객실판매수')
             ('hana4321', '2024-02-13', '판매수수료', '호텔스닷컴', 0, 4550000, '객실판매수')
             ('hana4321', '2024-02-19', '판매수수료', '호텔스닷컴', 0, 3700000, '객실판매수')
             ('hana4321', '2024-02-25', '판매수수료', '호텔스닷컴', 0, 4500000, '객실판매수')
             ('hana4321', '2024-02-29', '판매수수료', '호텔스닷컴', 0, 4450000, '객실판매수')
             ('hana4321', '2024-02-03', '고객용품비', 'ABC용품사', 0, 20000000, '고객용품')
             ('hana4321', '2024-02-10', '고객용품비', 'ABC용품사', 0, 15000000, '고객용품')
             ('hana4321', '2024-02-17', '고객용품비', 'ABC용품사', 0, 20000000, '고객용품')
             ('hana4321', '2024-02-24', '고객용품비', 'ABC용품사', 0, 15000000, '고객용품')
             ('hana4321', '2024-02-29', '고객용품비', 'ABC용품사', 0, 15000000, '고객용품')
             ('hana4321', '2024-02-19', '수도광열비', '수도광열비', 0, 41000000, '수도광열')
             ('hana4321', '2024-02-24', '노무용역비', '노무용역사', 0, 170000000, '노무용')
             ('hana4321', '2024-02-10', '세금과공과', '세금과공과', 0, 85000000, '세금과공')
             ('hana4321', '2024-02-03', '기타영업비용', 'A사', 0, 15000000, '영업비용A')
             ('hana4321', '2024-02-10', '기타영업비용', 'B사', 0, 20000000, '영업비용B')
```

```
        ('hana4321', '2024-02-17', '기타영업비용', 'A사', 0, 18000000, '영업비용C')
        ('hana4321', '2024-02-24', '기타영업비용', 'C사', 0, 15000000, '영업비용D')
        ('hana4321', '2024-02-29', '기타영업비용', 'C사', 0, 20000000, '영업비용E')
    ]
```

```python
In [ ]: with Connector() as conn:
        query = """
            INSERT INTO cashflow_tbl (
                account_id, dw_date, category, client,
                deposit, withdrawal, description
            )
            VALUES (%s, %s, %s, %s, %s, %s, %s);
        """
        conn.cursor.executemany(query, values)
        conn.connection.commit()
```

```python
In [ ]: with Connector() as conn:
        query = """
            SELECT * FROM cashflow_tbl
            WHERE dw_date BETWEEN '2024-02-01' AND '2024-02-29';
        """
        conn.cursor.execute(query)
        result = conn.cursor.fetchall()
        print(result)
```

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e}]

In [ ]:
```python
len(result)
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Out[ ]: 54

In [ ]: