Offline Assignment — Integration Engineer

Problem statement

At Setu, we work with a lot of APIs that are integrated to our many product offerings. This means that a lot of businesses have to integrate to our API specification and sometimes the businesses aren't able to integrate to our APIs due to lack of bandwidth or technical expertise. Now, as an eager and fast-growing startup, we want businesses to immediately start working with us.

Let's say a business has 2 APIs, a bill fetch API and bill pay API. Your assignment is to consume these 2 APIs by understanding their documentation and implementing it. Below is the documentation.

Assessment

The evaluation criteria for the assessment is as below:

1. Reusability
2. Understanding of APIs
3. Figuring out encryption and checksum
4. Authorisation

Documentation

Note:

1. **Assignment must be submitted in Python**
2. All requests need to be encrypted with AES-256 and mode ECB. Encryption key: `assignmentToSetu`
3. The value of "data" in every request payload needs to be hashed with SHA1 algorithm and passed as a value in the checksum field

4. Integrate each API in a separate file. This is important.

5. The flow of the APIs is to fetch a bill and then pay the bill. So you will create at least 2 methods. One to fetch a bill and the other to pay the bill. The result of the fetch bill will be used during the pay. These functions can be called asynchronously.

Bill Fetch API:

URL:
https://4hfvpey3dk.execute-api.ap-south-1.amazonaws.com/v1/bill-apis/stage/modules/module/bbps/bills/fetch

Method: Post

Payload (unencrypted):

{"data": {"loan_number":"BAS123JKE",},"checksum": "4406f3578082e33d1b16c0a7da74d2eb921eab48"}

Payload (encrypted):

VAsuXX7Pjs6G5PDQwteWsUkM0B5Zv94UFKqFe5tZLdRZYaBKFMU8e7r1YGpy3TgC7yu0R8FLa9+Iy3H05xQ21Fgg1bZNMwpe7osoNu19BqKN5R4CHDeWjTT7nn0lcQQwm+LsHNW2+FXa5wcpn5aD1w==

Response (encrypted):

35O+Ss56p7jQCOxuUZQX2qCnuI321cVFJbmnKypTufEC7VejyTTsqJsGixgggsjG4bxVIr8CPz46NJjMA/25SrrP/4HsucYsMzAkOFOFGyKfEGTs3lk1RDnWWL/hA4wWnHrzDs5JgmUoz+h+rDZWrn6XVAQzUQ1bQMAqDbggyQwCJs9NzhcU2QN7gCg0FAaFdM3TSzoqm+NpAyetdPMrWw==

Response (decrypted):

```
{
      'status': 200,
      'success': true,
            'details': {
                        'name': 'Ashok',
                        'due_amount': 2030.10,
                        'fetchId': "ASDFQ1231",
                        'loan_number': "BAS123JKE",
```

```
                    'total': 20000
      }
}
```

Bill Pay API:

URL:
https://4hfvpey3dk.execute-api.ap-south-1.amazonaws.com/v1/bill-apis/stage/modules/module/bbps/bills/receipt

Method: POST

Payload (unencrypted):

```
{
      "data": {
            "loan_number":"BAS123JKE",
            "fetchId": "37797773", // From the bills/fetch API reponse.
            "amountPaid":"2000",
            "txnRefId":"12312asD"
      },
      "checksum": "e9b17c190f20147e19c52cf9b32ad78b2069c0db"
}
```

Payload (encrypted):

iFHHzqWFPj36yZPTnhyit9TfERtPJBsHdCBbK0VOE8z4D5RaSTfvtV8auk+OUX3qgTh5yoMcHIqNpJeCvceXRCShbLl5fnEKvjL/BZci4zcVufI+CtkIsbwRUOWHslS0xIa+mYBWkIppgiMG+Khlh6AeRFfdIqIg9vXMVPL9e0lt6bqZmB8GDGJp97mItaAo/BXKdidmuQdhvQ4wfeswNL5dRXrw8kVslOSe0RPHzYU=

Response (encrypted)

35O+Ss56p7jQCOxuUZQX2qCnuI321cVFJbmnKypTufGx+tRp2L6EQVFu9b8NATu0zOjXj3MyJpf4yDKnc638N3/Il87icK7GVI2qZBiO/0gH7BNLgH8nP17jNkaBuAi3

Response (decrypted)

```
{
  'status': 200,
  'success': true,
```

```
  'details': {
     'receiptId': 12312312,
     'status': 'success'
  }
}
```

Link to encrypt and decrypt online:
https://www.devglan.com/online-tools/aes-encryption-decryption

Logic for decryption in Java (For reference to the assignment):

```
public static String decrypt(String input, String key) {
  byte[] output = null;
  try {
    SecretKeySpec key = new SecretKeySpec(key.getBytes(), "AES");
Cipher cipher = Cipher.getInstance("AES/ECB/PKCS5Padding");
    cipher.init(Cipher.DECRYPT_MODE, key);
    output = cipher.doFinal(Base64.decodeBase64(input.getBytes())); }
catch (Exception e) {
    System.out.println(e.toString());
  }
  return new String(output);
}
```