

```

// COLLECTION: MessageBuckets
[
  {
    _id: "messageBucketId_0",    // MessageBucketId
    chat_id: "chatId_123",      // ChatId
    start_date: "...",          // ISODateString
    end_date: "...",            // ISODateString
    messages: [
      // array of Message Objects (up to 32)

      {
        _id: "messageId_0",      // MessageId
        chat_id: "chatId_123",   // ChatId

        content: "Hello!",       // string
        pinned: false,           // boolean

        date_sent: "2025-10-13T15:14:05.781Z", // ISODateString
        sender: "userId_0"       // UserId
      }
    ]
  }
]

// COLLECTION: Chats
[
  {
    _id: "chatId_123",          // ChatId
    chat_type: "direct",        // enum: "direct" | "group"

    current_message_bucket: {
      id: "messageBucketId_0",  // MessageBucketId

      // count to store how many messages are in that bucket so if it's
      // already full then we can go ahead and make a new bucket
      count: 2                  // Integer
    },

    users: [

```

```
    // note: this is using the ** Extended Reference Pattern **
    // - this stores the most important information here and then an
id to go fetch more information if needed
```

```
{
    first_name: "Bob",      // string
    last_name: "Joe",      // string
    user_id: "userId_0"    // UserId
},
{
    first_name: "John",    // string
    last_name: "Doe",      // string
    user_id: "userId_1"    // UserId
}
],

pinned_messages: [],      // MessageId[]
requests: [],             // RequestId[]
},
{
```

```
    // note: this is using the ** Inheritance Pattern **
    // - this document has all the same fields shared with direct chats
but it has some unique fields to group chats
```

```
    _id: "chatId_456",     // ChatId
    chat_type: "group",     // enum: "direct" | "group"
```

```
    current_message_bucket: {
        id: "",            // MessageBucketId
        count: 0           // Integer
    },
```

```
    users:[
        {
            first_name: "Bob",    // string
            last_name: "Joe",      // string
            user_id: "userId_0"    // UserId
        },
        {
            first_name: "John",    // string
```

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        last_name: "Doe",          // string
        user_id: "userId_1"       // UserId
    },
],

pinned_messages: [],             // messageId[]
requests: [],                     // RequestId[]

// fields specific to group chats
group_name: "Study Group",       // string
admin: {
    first_name: "...",           // string
    last_name: "...",           // string
    user_id: "userId_0"         // UserId
},
logo: "<binary image data>",     // Buffer
background: "#111",              // string
banned_users: [                  // UserId[]
    "userId_15",
    "userId_16"
],
invited_users: [                 // UserId[]
    "userId_4",
    "userId_5"
],
visible: true                     // boolean
}
];
// COLLECTION: Users
[
    {
        _id: "userId_1",          // UserId

        username: "johndoe01",    // string
        first_name: "John",        // string
        last_name: "Doe",          // string
        email: "johndoe@example.com", // string
        profile_photo: "<binary image data>", // Buffer
    }
]

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friends: [
    { // ** Extended Reference Pattern **
        first_name: "Jane",           // string
        last_name: "Smith",           // string
        user_id: "userId_2"           // UserId
    }
],

blocked_users: [
    { // ** Extended Reference Pattern **
        first_name: "Bob",           // string
        last_name: "Joe",            // string
        user_id: "userId_0"           // UserId
    }
]
}
]
// COLLECTION: Requests -- ** Inheritance Pattern **
[
    {
        _id: "requestId_0",           // RequestId
        type: "friend_request",        // string

        sender: "sender_id",           // UserId
        receiver: "receiver_id",        // UserId
        status: "pending"               // string
    },
    {
        _id: "requestId_1",           // RequestId
        type: "chat_invite",           // string

        sender: "sender_id",           // UserId
        receiver: "receiver_id",        // UserId
        status: "pending",              // string

        // fields specific to chat invites
        chat_id: "chatId_0"            // ChatId
    }
]

```

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    }
]

// COLLECTION: Posts (public posts)
[
  {
    // PostBucket
    _id: "", // PostBucketId

    start_date: "", // ISODateString
    end_date: "", // ISODateString

    posts: [ // max 16
      {
        _id: "postId_0", // PostId
        content: "Hi everyone!", // string
        poster: "userId_0", // UserId

        date_posted: "2025-10-13T15:14:05.781Z", // ISODateString

        comments: [ // max depth 4
          {
            _id: "postId_2", // PostId
            parent_id: "postId_0", // PostId

            content: "Hello!", // string
            poster: "userId_1", // UserId

            date_posted: "2025-10-13T15:14:05.781Z" //
ISODateString
          }
        ]
      }
    ]
  }
]

```