

# Project 4 Task 2 – Distributed Application and Dashboard

---

## Project 4 Task 2 – Distributed Application and Dashboard

---

### Team

#### Team Member 1

- **Name:** Zoey Chou
- **AndrewID:** ichou
- **Email:** ichou@andrew.cmu.edu

#### Team Member 2

- **Name:** Sheldon Shi
- **AndrewID:** lijuns
- **Email:** lijuns@andrew.cmu.edu

### Description

The application will query related GIF files based on the user's input information and return a set of five related GIF files. Upon receiving a GIF file from the server, the application displays the file. The returned GIF link will be displayed under each GIF.

### Distributed Application Requirements

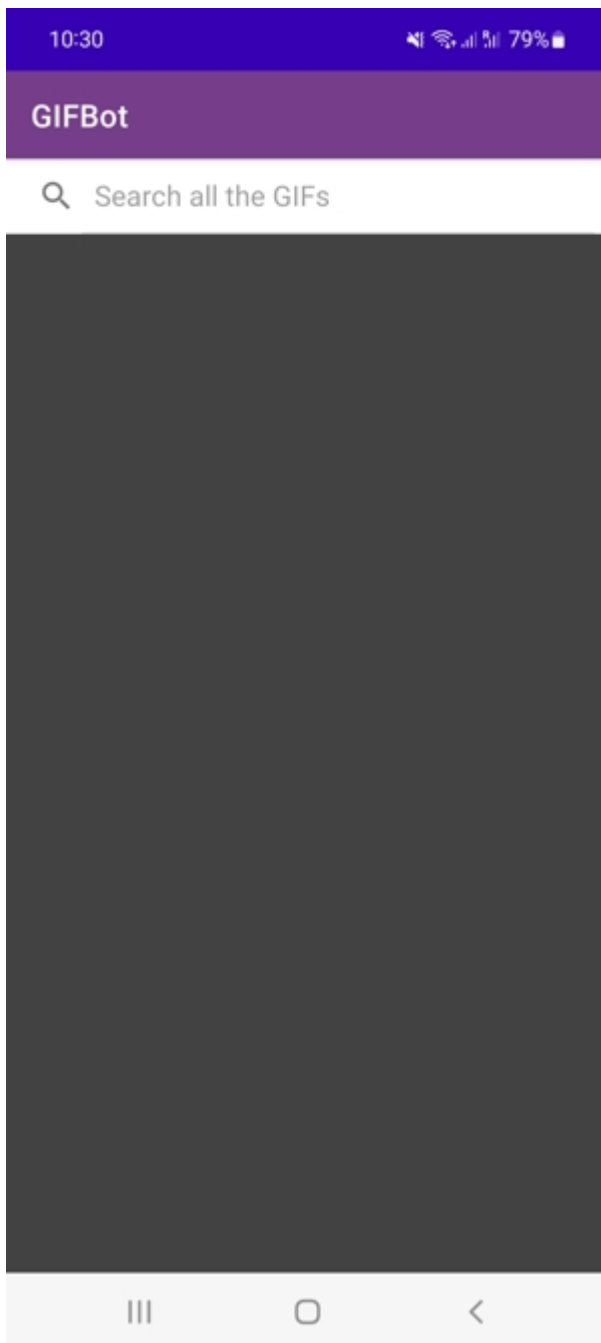
#### 1. Implement a native Android application

The name of the native Android application project in Android Studio is: **GIFBot** .  
The project folder is: **Project4Task2AndroidApp**

##### a. Has at least three different kinds of views in your Layout (TextView, EditText, ImageView, etc.)

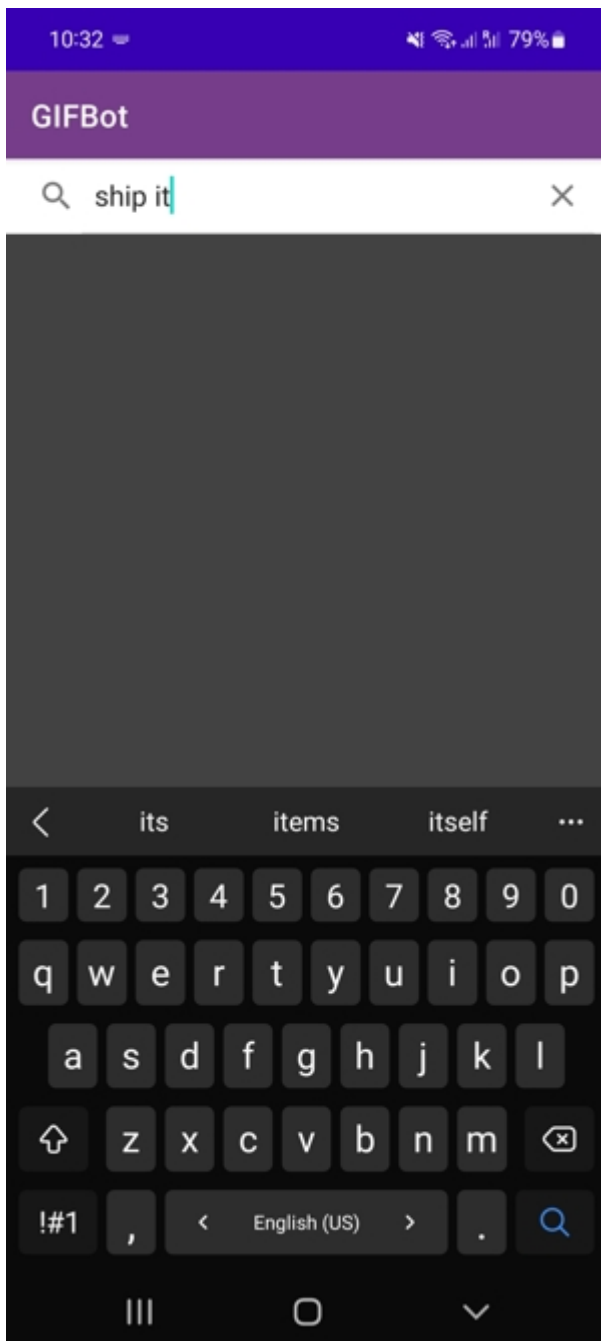
The application uses **TextView**, **SearchView**, **ImageView**, and **ListView**.  
Refer to **activity\_gifbot.xml** and **gif\_list\_item.xml** for details of how they are arranged in the Layout.

Below is a screenshot of the Android layout after starting the application



**b.Requires input from the user**

Below is a screenshot of the user searching for a GIFs of a 'ship it'.



c. Makes an HTTP request (using an appropriate HTTP method) to your web service

The application does an HTTP GET request in **GIFProcessor.java**. The HTTP request is:

[https://ds-project4-gifbot.herokuapp.com/Project4Task2WebService-1.0-SNAPSHOT/api/v1/gif?search=ship\\_it](https://ds-project4-gifbot.herokuapp.com/Project4Task2WebService-1.0-SNAPSHOT/api/v1/gif?search=ship_it) as the case of searching a `ship it` GIFs.

It also sends the following data as the http headers for the statistic use.

**Manufacture:** samsung

**Brand:** samsung

**Model:** SM-A226B

**AndroidVersion:** 12

The search method makes this request using **OkHttpClient** and parses the returned JSON with **Jackson** to find the GIFs URL, fetches the GIFs, and returns the GIFs of the picture.

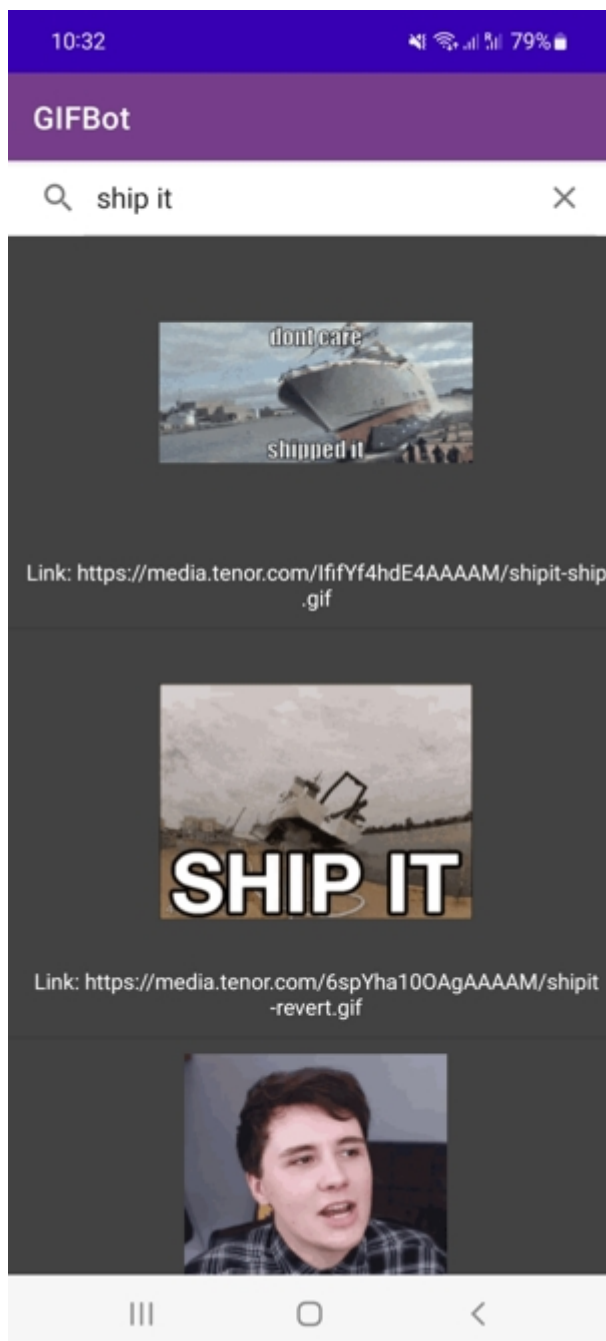
d. Receives and parses an XML or JSON formatted reply from the web service

- The response JSON from the web service

```
{
  "gifs": [
    "https://media.tenor.com/exU0RKqTu00AAAAM/i-see-it-i-ship-it.gif",
    "https://media.tenor.com/1Hoy6ABLPicAAAAM/binoculars-ship.gif",
    "https://media.tenor.com/jllngY0wdqwAAAAM/i-ship-it.gif",
    "https://media.tenor.com/pAc4dATt5E4AAAAM/i-ship-it-yes.gif",
    "https://media.tenor.com/QG9WKduTbw4AAAAM/ship-it.gif",
    "https://media.tenor.com/y5dXmGmoBCQAAAAM/msftgarage-
microsoftgarage.gif",
    "https://media.tenor.com/NtLKdRlH9HgAAAAM/i-ship-it-shipped.gif",
    "https://media.tenor.com/IfifYf4hdE4AAAAM/shipit-ship.gif",
    "https://media.tenor.com/6spYha100AgAAAAM/shipit-revert.gif",
    "https://media.tenor.com/H5Ml6GdT12cAAAAM/i-ship-it-ship-it.gif"
  ],
  "statusCode": 200
}
```

#### e. Displays new information to the user

Below is the screen shot after the five GIFs has been returned.



f. Is repeatable (I.e. the user can repeatedly reuse the application without restarting it.)

The user can type in another search term and hit Submit.

Below is an example of searching **lgtn** after seaching **ship it** GIFs.

11:04

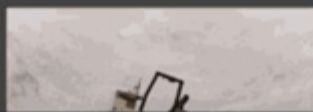
76%

GIFBot

lgtm



Link: <https://media.tenor.com/lfifYf4hdE4AAAAM/shipit-ship.gif>



litmus

leftmost





## 2. Implement a web application, deployed to Heroku

The URL of the web service deployed to Heroku is: **ds-project4-gifbot**

The project directory name is **Project4Task2WebService**.

### a. Using an HttpServlet to implement a simple (can be a single path) API

There are two parts in the web application project, one is for the endpoint **/api/v1/gif** to search gifs based on the user input, and the other one is for the endpoint **/dashboard** to generate and display the dashboard page.

The endpoint **/api/v1/gif**

Model :

```
model
├─ ClientRequestInfo.java
```

```
├─ ClientResponseInfo.java
├─ DeviceInfo.java
├─ ErrorResponse.java
├─ GIFsResponse.java
├─ IResponse.java
├─ Latency.java
├─ LogEvent.java
├─ tenor
│   ├─ TenorMediaFormat.java
│   ├─ TenorResponse.java
│   ├─ TenorResult.java
│   └─ TenorTinyGif.java
├─ TenorRequestInfo.java
├─ TenorResponseInfo.java
```

Controller:

web

```
└─ GIFBotServlet.java
```

Service:

service

```
├─ GIFBotService.java
└─ LoggingService.java
```

Repository:

repository

```
├─ LoggingRepository.java
└─ MongoClient.java
```

The endpoint **/dashboard**

Model:

model

```
├─ Dashboard.java
├─ Latency.java
├─ LogEvent.java
├─ SystemLog.java
└─ TopDeviceInfo.java
```

Controller:

web

```
├─ DashboardServlet.java
```



View:

```
webapp
├─ index.jsp
```

Service:

```
service
├─ DashboardService.java
└─ LoggingService.java
```

Repository:

```
repository
├─ LoggingRepository.java
└─ MongoClient.java
```

## b. Receives an HTTP request from the native Android application

**GIFBotService.java** receives the HTTP GET request with the argument "search".

It passes the search string on to the **GIFBotService.java** to search the gifs from the 3rd party api.

## c. Executes business logic appropriate to your application

**GIFBotService.java** makes an HTTP request to:

<https://tenor.googleapis.com/v2/search>

It then parses the JSON response and extracts the parts it needs to respond to the Android application.

## d. Replies to the Android application with an XML or JSON formatted response.

**GIFBotService.java** formatted the response based on the response of the 3rd party api. If the 3rd party api responds successfully, it will return the following JSON response to the mobile app.

```
{
  "gifs": [
    "https://media.tenor.com/exU0RKqTu00AAAAM/i-see-it-i-ship-it.gif",
    "https://media.tenor.com/1Hoy6ABLPicAAAAM/binoculars-ship.gif",
    "https://media.tenor.com/jllngY0wdqwAAAAM/i-ship-it.gif",
    "https://media.tenor.com/pAc4dATt5E4AAAAM/i-ship-it-yes.gif",
    "https://media.tenor.com/QG9WKduTbw4AAAAM/ship-it.gif",
    "https://media.tenor.com/y5dXmGmoBCQAAAAM/msftgarage-
microsoftgarage.gif",
    "https://media.tenor.com/NtLKdRlH9HgAAAAM/i-ship-it-shipped.gif",
    "https://media.tenor.com/IfifYf4hdE4AAAAM/shipit-ship.gif",
    "https://media.tenor.com/6spYha100AgAAAAM/shipit-revert.gif",
    "https://media.tenor.com/H5Ml6GdT12cAAAAM/i-ship-it-ship-it.gif"
  ],
```

```
"statusCode": 200
}
```

Otherwise, it will retrun an error resoponse as following JSON.

```
{
  "message": "invalid input parameter",
  "statusCode": 400
}
```

### 3. Handle error conditions - Does not need to be documented.

- Invalid mobile app input
  - If the user input is invalid, the service returns the error message on the screen
- Invalid server-side input (regardless of mobile app input validation)
  - If the query parameter `search` is invalid(empty or longer than 50 characters), it will return the error response as follows:

```
{
  "message": "invalid input parameter",
  "statusCode": 400
}
```

- Mobile app network failure, unable to reach server
  - The app will display an error message
- Third-party API unavailable
- Third-party API invalid data
  - Both of the above will be handle on the the exception cause section.

```
// GIFBotService.java, search method
catch (IOException e) {
    return new ErrorResponse(e.getMessage(),
    HttpServletResponse.SC_BAD_GATEWAY);
}
```

### 4. Log useful information - Itemize what information you log and why you chose it.

- Request information from the mobile phone
  - This information can be use to record the details of the request. When there is an issue, the developer can know what the user's input.
  - The serarch term is also used for the statistic analysis.
- Request device information
  - This can help resolve the issuse with the particular user's device

- It is also used for the statistic analysis.
- Response to the mobile
  - This information is useful for track the content sent to the mobile
  - It is also used for the statistic analysis.
- Request information to the 3rd party API
  - When the 3rd party API returns an error, this log can help the develop know what it sent to the 3rd party.
- Resopnse from the 3rd party API
  - When there is an issue about the response, it can know the raw response from the 3rd party API.
- The latency of the web service
  - This can help the develop know the performance of the system.
  - It is also used for the statistic analysis.
- The latency of the 3rd party API
  - This can help the develop know the performance of the 3rd party.
  - It is also used for the statistic analysis.
- Date and time for each request and response
  - When there is an issue, it can help to find the correct information based on the time.

## 5. Store the log information in a database

The web service can connect, store, and retrieve information from a MongoDB database in the cloud.

- MongoClient.java handles the connect to the MongoDB and it is a singleton.

```
package edu.cmu.andrew.project4task2web.service.repository;

import com.mongodb.client.MongoClient;
import com.mongodb.client.MongoClients;

public class MongoClient {
    // mongodb connecting string
    private final static String CONNECTION_STRING =
"mongodb://dsteamproject4:JyHsGiSpAuU44rrL@ac-3jlcg4c-shard-00-01" +
        ".y3xuxkb.mongodb.net:27017,ac-3jlcg4c-shard-00-02.y3xuxkb.mongodb.net:27017,ac-3jlcg4c-shard-00-00" +
        ".y3xuxkb.mongodb.net:27017/myFirstDatabase?w=majority&retryWrites=true&tls=true&authMechanism=SCRAM-SHA-1";
```

```

// create instance of MongoClient
private static MongoClient instance = null;

// create MongoClient object
private final MongoClient client;

// constructor of MongoClient
private MongoClient() {
    client = MongoClient.create(CONNECTION_STRING);
}

// get instance of MongoClient
public static synchronized MongoClient getInstance() {
    // check if MongoClient instance is null, then create new one
    if (instance == null) {
        instance = new MongoClient();
    }
    return instance;
}

// get MongoClient object
public MongoClient getClient() {
    return client;
}
}

```

- LoggingRepository.java handles the log insertion and query.
  - In this web server, it use the `upsert` to handle the log. It will insert a new log if the log with same id is not in the database. Otherwise, it will update the record to add more log information.
  - `_id` is an **UUID** as the request id. For each request, the request id is used for the whole processing. So that there is one log record for each request.

```

// part of the LoggingRepository.java code
/**
 * upsert the logEvent data to the MongoDB
 *
 * @param logEvent
 * @return
 */
public Document upsert(LogEvent logEvent) {
    // define the filter with _id
    Bson filter = Filters.eq("_id", logEvent.getRequestID());
}

```

```
// set up the find and update option
FindOneAndUpdateOptions upsertOptions = new FindOneAndUpdateOptions();
upsertOptions.returnDocument(ReturnDocument.AFTER);
upsertOptions.upsert(true);
// do the insert or update
return getCollection().findOneAndUpdate(filter, toBson(logEvent),
upsertOptions);
}
```

## 6. Display operations analytics and full logs on a web-based dashboard

**a. A unique URL addresses a web interface dashboard for the web service.**

- URL: (both are directed to the same page)
  - <https://ds-project4-gifbot.herokuapp.com/Project4Task2WebService-1.0-SNAPSHOT/>
  - <https://ds-project4-gifbot.herokuapp.com/Project4Task2WebService-1.0-SNAPSHOT/dashboard>

**b. The dashboard displays at least 3 interesting operations analytics.**

Below is a screenshot of the interesting operations analytics in the dashboard.

GIFBot Dashboard

ds-project4-gifbot.herokuapp.com/Project4Task2WebService1.0-SNAPSHOT/dashboard

GIFBot Dashboard

Top Five Popular Keywords

lgtn1

lgtn

pancake

ship it

happy

Top Five Popular GIFs

https://media.tenor.com/nAllimRXjIAAAAM/8th-rb-8th-moment.gif

https://media.tenor.com/HuCValNhGcMAAAAM/framed-callmehottea.gif

https://media.tenor.com/D3v6noHR\_YgAAAAAM/millow.gif

https://media.tenor.com/gJMglZD0CncAAAAAM/abc-sign-language.gif

https://media.tenor.com/oVa3Sa52wTwAAAAAM/allianceblock-albt.gif

Top Mobile Manufacture

samsung

Google

Panasonic

SAMSUNG

Huawei

Top Mobile Brand

samsung

google

Galaxy12

Panasonic

Sony

Top Mobile Model

SM-A226B

sdk\_gphone64\_x86\_64

A22

P1

Top Android Version

12

13

14

11

Service Latency

Average: 1268.0247933884298 ms

Maximum: 6942.0 ms

Minimum: 48.0 ms

Recent Service Latency(1-5) (ms)

249.0

48.0

1098.0

5550.0

536.0

External API Latency

Average: 316.801652892562 ms

Maximum: 1644.0 ms

Minimum: 35.0 ms

Recent External API Latency(1-4) (ms)

156.0

989.0

946.0

216.0

System Log

Client Request Info

Client Response Info

Client Device Info

3rd Party Request Info

3rd Party Response Info

1

Document{{date=Mon Nov 21 00:00:00 UTC 2022, searchTerm=gogogo, time=Thu Jan 01 16:54:06 UTC 1970}}

Document{{date=Mon Nov 21 00:00:00 UTC 2022, responseBody=Document{{gifs=[https://media.tenor.com/EYBNOEtGi28AAAAAM/go-go-cheerleader.gif, https://media.tenor.com/EKMw95FDSRUAAAAAM/go-go-toby-ste

Document{{androidVersion=12, brand=samsung, manufacture

Document{{baseUrl=https://tenor.googleapis.com, date=Mon Nov 21 00:00:00 UTC 2022, time=T

Document{{date=Mon Nov 21 00:00:00 UTC 2022, tenorResponseBody={"results": [{"id": "1261092799840160623", "title": "", "media\_formats": {"tingi": {"url": "https://media.tenor.com/EYBNOEtGi28AAAAAM/go-go-cheerleader.gif", "duration": 0, "preview": "", "dims": [220, 123], "size": 41050}}, "created": 1649311921.780653, "content\_description": "Go Go Cheerleader GIF", "itemurl": "https://tenor.com/view/go-go-cheerleader-priconne-princess-connect-monika-gif-25321719", "url": "https://tenor.com/bSpuz.gif", "tags": ["Go Go", "cheerleader", "priconne", "Princess Connect", "monika", "cheer"], "flags": [], "hasaudio": false}, {"id": "1198857657171897109", "title": "", "media\_formats": {"tingi": {"url": "https://media.tenor.com/EKMw95FDSRUAAAAAM/go-go-toby-stephe

- Top Five Popular Keywords, Top Five Popular GIFs

# GIFBot Dashboard

Top Five Popular Keywords	Top Five Popular GIFs
lgtn1	<a href="https://media.tenor.com/nAlliimRXjIAAAAM/8th-rb-8th-moment.gif">https://media.tenor.com/nAlliimRXjIAAAAM/8th-rb-8th-moment.gif</a>
lgtn	<a href="https://media.tenor.com/HuCVaINhGcMAAAAM/framed-callmehottea.gif">https://media.tenor.com/HuCVaINhGcMAAAAM/framed-callmehottea.gif</a>
pancake	<a href="https://media.tenor.com/D3v6noHR_YgAAAAM/millow.gif">https://media.tenor.com/D3v6noHR_YgAAAAM/millow.gif</a>
ship it	<a href="https://media.tenor.com/gJMgIZD0CncAAAAM/abc-sign-language.gif">https://media.tenor.com/gJMgIZD0CncAAAAM/abc-sign-language.gif</a>
happy	<a href="https://media.tenor.com/oVa35a52wTwAAAAM/allianceblock-albt.gif">https://media.tenor.com/oVa35a52wTwAAAAM/allianceblock-albt.gif</a>

- Top Device: Top Mobile Manufacture, Top Mobile Brand, Top Mobile Model, Top Android Version

Top Mobile Manufacture	Top Mobile Brand	Top Mobile Model	Top Android Version
samsung		SM-A226B	
Google	samsung	sdk_gphone64_x86_64	12
Panasonic	google	A22	13
SAMSUNG	Galaxy12	P1	14
Huawei	Panasonic		11
	Sony		

- Latency: Service Latency, Recent Service Latency(1-5) (ms), External API Latency, Recent External API Latency(1-4) (ms)

Service Latency	Recent Service Latency(1-5) (ms)	External API Latency	Recent External API Latency(1-4) (ms)
Average: 1268.0247933884298 ms	249.0	Average: 316.801652892562 ms	156.0
Maximum: 6942.0 ms	48.0	Maximum: 1644.0 ms	989.0
Minimum: 48.0 ms	1098.0	Minimum: 35.0 ms	946.0
	5550.0		216.0
	536.0		

c. The dashboard displays formatted full logs.

Below is a screenshot of the formatted full logs in the dashboard.

## System Log

#	Client Request Info	Client Response Info	Client Device Info	3rd Party Request Info	3rd Party Response Info
1	Document{{date=Mon Nov 21 00:00:00 UTC 2022, searchTerm=gogogo, time=Thu Jan 01 16:54:06 UTC 1970}}	Document{{date=Mon Nov 21 00:00:00 UTC 2022, responseBody=Document{{gifs=[https://media.tenor.com/EYBNOEtGi28AAAAM/go-go-cheerleader.gif, https://media.tenor.com/EKMW95fDSRUAAAAM/go-go-toby-stephens.gif, https://media.tenor.com/qNDYitDth2MAAAMM/go-go-dog.gif, https://media.tenor.com/LzMqD1PTUG8AAAAM/minnie-mouse-go-go.gif, https://media.tenor.com/v4EFZUIEV98AAAAM/hello-kitty-go.gif, https://media.tenor.com/68AqXquXUQsAAAAM/ruffa-mae-go-go-g.o.gif, https://media.tenor.com/1EvnYwePM28AAAAM/taehyung-gogo.gif, https://media.tenor.com/501PYJ_1TwcAAAAM/rimu-go.gif, https://media.tenor.com/VYLcr1_F4NsAAAAM/go-go-go-go-south-park.gif, https://media.tenor.com/zgREFSAyq2MAAAM/madagascar-alex-the-lion.gif], statusCode=200}, time=Thu Jan 01 16:54:06 UTC 1970}}	Document{{brand=sony, model=SM-A226B}}	Document{{baseUrl=https://tenor.googleapis.com, date=Mon Nov 21 00:00:00 UTC 2022, time=Thu Jan 01 16:54:06 UTC 1970, uri=/v2/search?key=AlzaSyAJCaxc_oKCOMjCteA3hczXM1GpUyauw&q=gogogo&client_key=ds_project4_gifbot&media_filter=tenor&random=false&limit=10}}	Document{{date=Mon Nov 21 00:00:00 UTC 2022, responseBody={ "results": [ { "id": "1261092799840160623", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/EYBNOEtGi28AAAAM/go-go-cheerleader.gif", "duration": 0, "preview": "", "dims": [ 220, 123 ], "size": 41050 }, }, "created": 1649311921.780653, "content_description": "Go Go Cheerleader GIF", "itemurl": "https://tenor.com/view/go-go-cheerleader-priconne-princess-connect-monika-gif-25321719", "url": "https://tenor.com/bSpUz.gif", "tags": [ "Go Go", "cheerleader", "priconne", "Princess Connect", "monika", "cheer" ], "flags": [], "hasaudio": false }, { "id": "1198855765771897109", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/EKMW95fDSRUAAAAM/go-go-toby-stephens.gif", "duration": 0, "preview": "", "dims": [ 220, 124 ], "size": 106080 }, }, "created": 1599233319.4450719, "content_description": "Go Go Go Toby Stephens GIF", "itemurl": "https://tenor.com/view/go-go-go-toby-stephens-bill-beaman-hunter-killer-move-gif-18343775", "url": "https://tenor.com/bo8dv.gif", "tags": [ "Go Go Go", "Toby Stephens", "Bill Beaman", "Hunter Killer", "Move", "Lets Go", "Move Out", "Get Going" ], "flags": [], "hasaudio": false }, { "id": "12164460684250023779", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/qNDYitDth2MAAAM/go-go-dog.gif", "duration": 0, "preview": "", "dims": [ 220, 264 ], "size": 16327 }, }, "created": 1509034130.493398, "content_description": "Go Go Dog GIF", "itemurl": "https://tenor.com/view/go-go-dog-gif-1009920", "url": "https://tenor.com/Qxqu.gif", "tags": [ "Go Go", "Dog" ], "flags": [ "audio" ], "hasaudio": true }, { "id": "3401108388914090511", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/LzMqD1PTUG8AAAAM/minnie-mouse-go-go.gif", "duration": 0, "preview": "", "dims": [ 220, 181 ], "size": 63696 }, }, "created": 1585862855.00862, "content_description": "Minnie Mouse Go Go GIF", "itemurl": "https://tenor.com/view/minnie-mouse-go-go-cheer-go-tash-gif-16763773", "url": "https://tenor.com/bivbB.gif", "tags": [ "Minnie Mouse", "Go Go", "cheer", "Go Tash" ], "flags": [], "hasaudio": false }, { "id": "13799316665697327071", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/v4EFZUIEV98AAAAM/hello-kitty-go.gif", "duration": 0, "preview": "", "dims": [ 220, 237 ], "size": 100314 }, }, "created": 1507167294.573163, "content_description": "Hello Kitty Go GIF", "itemurl": "https://tenor.com/view/hello-kitty-go-cheering-gif-9921752", "url": "https://tenor.com/PNqg.gif", "tags": [ "Hello Kitty", "Go", "Cheering" ], "flags": [ "audio" ], "hasaudio": true }, { "id": "16987624824527868171", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/68AqXquXUQsAAAAM/ruffa-mae-go-go-gif", "duration": 0, "preview": "", "dims": [ 220, 165 ], "size": 413364 }, }, "created": 1567748110.871912, "content_description": "Ruffa Mae Go Go Go GIF", "itemurl": "https://tenor.com/view/ruffa-mae-go-go-go-funny-filipina-gif-14974564", "url": "https://tenor.com/baZJo.gif", "tags": [ "Ruffa Mae", "Go Go Go", "funny", "filipina" ], "flags": [], "hasaudio": false }, { "id": "15297574971808625519", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/501PYJ_1TwcAAAAM/rimu-go.gif", "duration": 0, "preview": "", "dims": [ 220, 123 ], "size": 41050 }, }, "created": 1649311921.780653, "content_description": "Go Go Cheerleader GIF", "itemurl": "https://tenor.com/view/go-go-cheerleader-priconne-princess-connect-monika-gif-25321719", "url": "https://tenor.com/bSpUz.gif", "tags": [ "Go Go", "cheerleader", "priconne", "Princess Connect", "monika", "cheer" ], "flags": [], "hasaudio": false }, { "id": "1198855765771897109", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/EKMW95fDSRUAAAAM/go-go-toby-stephens.gif", "duration": 0, "preview": "", "dims": [ 220, 124 ], "size": 106080 }, }, "created": 1599233319.4450719, "content_description": "Go Go Go Toby Stephens GIF", "itemurl": "https://tenor.com/view/go-go-go-toby-stephens-bill-beaman-hunter-killer-move-gif-18343775", "url": "https://tenor.com/bo8dv.gif", "tags": [ "Go Go Go", "Toby Stephens", "Bill Beaman", "Hunter Killer", "Move", "Lets Go", "Move Out", "Get Going" ], "flags": [], "hasaudio": false }, { "id": "12164460684250023779", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/qNDYitDth2MAAAM/go-go-dog.gif", "duration": 0, "preview": "", "dims": [ 220, 264 ], "size": 16327 }, }, "created": 1509034130.493398, "content_description": "Go Go Dog GIF", "itemurl": "https://tenor.com/view/go-go-dog-gif-1009920", "url": "https://tenor.com/Qxqu.gif", "tags": [ "Go Go", "Dog" ], "flags": [ "audio" ], "hasaudio": true }, { "id": "3401108388914090511", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/LzMqD1PTUG8AAAAM/minnie-mouse-go-go.gif", "duration": 0, "preview": "", "dims": [ 220, 181 ], "size": 63696 }, }, "created": 1585862855.00862, "content_description": "Minnie Mouse Go Go GIF", "itemurl": "https://tenor.com/view/minnie-mouse-go-go-cheer-go-tash-gif-16763773", "url": "https://tenor.com/bivbB.gif", "tags": [ "Minnie Mouse", "Go Go", "cheer", "Go Tash" ], "flags": [], "hasaudio": false }, { "id": "13799316665697327071", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/v4EFZUIEV98AAAAM/hello-kitty-go.gif", "duration": 0, "preview": "", "dims": [ 220, 237 ], "size": 100314 }, }, "created": 1507167294.573163, "content_description": "Hello Kitty Go GIF", "itemurl": "https://tenor.com/view/hello-kitty-go-cheering-gif-9921752", "url": "https://tenor.com/PNqg.gif", "tags": [ "Hello Kitty", "Go", "Cheering" ], "flags": [ "audio" ], "hasaudio": true }, { "id": "16987624824527868171", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/68AqXquXUQsAAAAM/ruffa-mae-go-go-gif", "duration": 0, "preview": "", "dims": [ 220, 165 ], "size": 413364 }, }, "created": 1567748110.871912, "content_description": "Ruffa Mae Go Go Go GIF", "itemurl": "https://tenor.com/view/ruffa-mae-go-go-go-funny-filipina-gif-14974564", "url": "https://tenor.com/baZJo.gif", "tags": [ "Ruffa Mae", "Go Go Go", "funny", "filipina" ], "flags": [], "hasaudio": false }, { "id": "15297574971808625519", "title": "", "media_formats": { "tinygif": { "url": "https://media.tenor.com/501PYJ_1TwcAAAAM/rimu-go.gif", "duration": 0, "preview": "", "dims": [ 220, 123 ], "size": 41050 }, }, "created": 1649311921.780653, "content_description": "Go Go Cheerleader GIF", "itemurl": "https://tenor.com/view/go-go-cheerleader-priconne-princess-connect-monika-gif-25321719", "url": "https://tenor.com/bSpUz.gif", "tags": [ "Go Go", "cheerleader", "priconne", "Princess Connect", "monika", "cheer" ], "flags": [], "hasaudio": false } ] }

## 7. Deploy the web service to Heroku

Below is a screenshot of the application deployment on the Heroku.

← → ↺

dashboard.heroku.com/apps/ds-project4-gifbot

Salesforce Platform

HEROKU

Jump to Favorites, Apps, Pipelines, Spaces...

⋮

🔍

Personal > ds-project4-gifbot

☆ Open app More

Overview

Resources

Deploy

Metrics

Activity

Access

Settings

Installed add-ons \$0.00/month

Configure Add-ons

There are no add-ons for this app  
You can add add-ons to this app and they will show here. [Learn more](#)

Dyno formation \$0.00/month


Configure Dynos

This app is using free dynos

web /bin/sh -c chmod +x /home/tomcat\_starter.sh;\ /hom... ON

Collaborator activity ⓘ



Manage Access



 dsteampj4@gmail.com



🔒 10 deploys



Latest activity



All Activity



  dsteampj4@gmail.com: Deployed web (326ee2e3f724)  
Today at 10:56 AM · v12



  dsteampj4@gmail.com: Deployed web (7ee84c15da80)  
Today at 12:03 AM · v11

  dsteampj4@gmail.com: Deployed web (8dfcbf1da5ac)  
Yesterday at 11:55 PM · v10

  dsteampj4@gmail.com: Deployed web (7825864caee8)  
Nov 19 at 11:58 PM · v9

  dsteampj4@gmail.com: Deployed web (fe705ff9b51d)  
Nov 18 at 1:58 PM · v8

  dsteampj4@gmail.com: Deployed web (eae3e912bef)  
Nov 18 at 12:33 PM · v7

  dsteampj4@gmail.com: Deployed web (d501765c6be1)  
Nov 18 at 11:46 AM · v6

In this project, we use the Github to do the code version control and team collaboration. For the Heroku deployment, the project uses the Github Actions to do the continuous delivery. For each merge to the main branch, the deployment will be triggered and run automatically.

- Dockerfile for Heroku

```
# Use Tomcat 10, which supports Servlets 5
FROM tomcat:10.1.0-M5-jdk16-openjdk-slim-bullseye

# This provides better support for running the JVM in a container
ENV JAVA_OPTS="-Xmx300m"

# Expose port 8080 when running on localhost
EXPOSE 8080

# Copy in our ROOT.war to the right place in the container
COPY target/Project4Task2WebService-1.0-SNAPSHOT.war
/usr/local/tomcat/webapps/

# LOCALHOST: Run catalina in the container
# Comment the next line out if running on Heroku
#CMD ["catalina.sh", "run"]

# HEROKU: Run catalina in a container on Heroku
# Copy tomcat_starter.sh to the container; will executed when deployed
# Comment the next two lines if running on Localhost
COPY heroku/tomcat_starter.sh /home/
CMD chmod +x /home/tomcat_starter.sh; /home/tomcat_starter.sh
```

- Code for Github workflow

```
name: Heroku Deployment
on:
  push:
    branches: [ main ]
jobs:
  build:
    runs-on: ubuntu-latest
    steps:
      - name: Git Checkout
        uses: actions/checkout@v1
      - name: Set up JDK 11
        uses: actions/setup-java@v1
        with:
```



```

    java-version: 11
  - name: Build with Maven
    run: mvn -B package --file Project4Task2WebService/pom.xml
  - name: Heroku Container Registry login
    env:
      HEROKU_API_KEY: ${ secrets.HEROKU_API_KEY }
    working-directory: Project4Task2WebService/heroku
    run: heroku container:login
  - name: Build and push
    env:
      HEROKU_API_KEY: ${ secrets.HEROKU_API_KEY }
    working-directory: Project4Task2WebService/heroku
    run: heroku container:push -a ${ secrets.HEROKU_APP_NAME } web --
context-path=..
  - name: Release
    env:
      HEROKU_API_KEY: ${ secrets.HEROKU_API_KEY }
    working-directory: Project4Task2WebService/heroku
    run: heroku container:release -a ${ secrets.HEROKU_APP_NAME } web

```

- Screenshot for Github Actions

The screenshot displays the GitHub Actions interface for the repository `s3ndd/ds_project4`. The 'All workflows' tab is active, showing a list of 14 workflow runs. The runs are filtered by the `main` branch. The table below summarizes the visible workflow runs:

Workflow Name	Commit	Branch	Status	Event	Time
handle null	Commit b27502d pushed by s3ndd	main	Success	Push	1 hour ago (1m 10s)
ignore the release folder	Commit 39ba10f pushed by s3ndd	main	Success	Push	12 hours ago (1m 4s)
Merge pull request #8 from s3ndd/Zoey_2	Commit 0761737 pushed by s3ndd	main	Success	Pull Request	12 hours ago (1m 0s)
Merge pull request #7 from s3ndd/add-more-dashboard	Commit 11d5a35 pushed by s3ndd	main	Success	Pull Request	2 days ago (53s)
Merge pull request #6 from s3ndd/Zoey	Commit d0101cf pushed by s3ndd	main	Success	Pull Request	3 days ago (1m 25s)
corret sevlet name	Commit 42657c pushed by s3ndd	main	Success	Push	3 days ago (1m 59s)
pom	Commit 3f92e23 pushed by s3ndd	main	Success	Push	3 days ago (1m 4s)