There A LOT of technology used in this project and installed via npm. All of them are open source and are under MIT license except for Sharp which is Apache license.

Express - MIT license

We're still using express from phase 1 to serve http response. Express is basically a wrapper for the http library that comes with nodejs. I'm using express to serve http response that is core part of my backend api logic.

https://github.com/expressjs/express/blob/master/lib/application.js#L616 basically uses the http library to create the server.

CORS - MIT license

The cors library is mostly used for the development phase. It added the header: 'Access-Control-Allow-Origin' to the http response that allow react app to work with backend express server: https://github.com/expressjs/cors/blob/master/lib/index.js#L43 where the react frontend runs in a different port from the express backend.

Socket.io - MIT license

The socket.io library uses the engine.io which uses the websocket library. I used socket io to update the votes, comments, images if a new one is updated. It also falls back to ajax polling if somehow a websocket connection could not be established.

https://github.com/socketio/engine.io/blob/master/lib/server.js#L308 is where engine.io calls the ws library to handle the handshake.

https://github.com/websockets/ws/blob/master/lib/constants.js#L5 is where the ws library stores the guid string.

Sharp - Apache-2.0 license

I used this library to resize the images that users uploaded to be used in the home page. This is the resize function:

https://github.com/lovell/sharp/blob/master/lib/resize.js#L207. It seems to be a wrapper

for codes that was written in c++. In Windows, there are a lot of .dll files in my node_modules that are not in the github code. I'm guessing that npm install also downloads different compiled code for different operating systems.

Mongoose - MIT license

Mongoose is a wrapper for mongodb library that is written for nodejs. It made saving and retrieving datas from the mongodb database much easier.

https://github.com/Automattic/mongoose/blob/master/lib/connection.js#L707 is where mongoose uses the mongodb library to connect to the mongodb database.

Multer - MIT license

I used multer to handle multipart form data that browsers send to upload images. It uses the busboy library to handle that multipart data.

https://github.com/mscdex/busboy/blob/master/lib/types/multipart.js#L23 busboy uses regex to detect if multipart is used. In the same file, it also uses regex to detect the boundary.

Base64url - MIT license

This acts as a safeguard against random characters generated by crypto to make sure that it doesn't contain characters like '/'.

https://github.com/brianloveswords/base64url/blob/master/src/base64url.ts#L23 basically uses regex to replace those characters.

Crypto - part of node js built-in library so I would assume it's MIT license. I'm using this to produce random strings for the name of the uploaded image

https://github.com/nodejs/node/blob/5c347887d909a82326c46d2e00e41756405128da/lib/internal/crypto/random.js#L51 is where crypto generates random bytes of string.

React - MIT license

I'm using react for the front end, since it is a framework and there is no particular part that is more important than others, here is their github link: https://github.com/facebook/react. React is a framework developed by facebook, it is a single page application meaning that there is only a single html page and uses javascript to change parts of it when needed instead of loading new html files every time something new is requested. This allows the page to be loaded much quicker.

Axios - MIT license

I used axios in react to handle api requests from the server. It handles api requests for my react app. In https://github.com/axios/axios/blob/master/lib/core/Axios.js#L73 is part of code that handles get and post requests.