1. What is the flow of information in a typical request, from when we type an address on our browser, to when we receive the response on our browser?

Type address -> DNS match name to ip address -> GET request to server -> server logic handles given route / redirects -> returns render of webpage with HTML/CSS/JavaScript

1. What is MVC, OOP and procedural programming? Why would we use each?

MVC – Model Viewer Controller, framework structure that is highly scalable, great for working in teams, modular

OOP – Object Oriented Programming, use of objects to reduce code redundancy, abstract complex logic to instances of objects

Procedural programming – top down sequential logic, allows for writing sequential logic/instructions to solving a problem

1. What is jQuery and why do we use it?

JQuery is a JavaScript framework and is used to simplify manipulating the Document Object Model (DOM) and AJAX

1. Consider a database with the following tables: users, friendships, where users includes id, name, and email, and friendships includes id, user\_id, friend\_id; If our friendships table includes a single association to confirm a friendship between two users, what is the QUERY to pull all of your non-friends?

User.objects.exclude(User.friendships.user\_id = my\_id)

1. What are some ways to make your website uniform across multiple browsers?

CSS reset,

1. What are the differences between submitting a form via method="post" vs method="get"?

Post can contain form information in the request where get does not

1. What are the advantages/disadvantages of sending data to the server in the url vs making a post request?

Sending in the url is a good way to generate templates with given data but bad for processing.

Making a post is good in that it can hold lots of data, but requires a separate route to process and redirect

1. Why should we never render a page on a post request.

Form information is resubmitted every time page is refreshed by user.

1. You notice that when you click submit on a form, your app breaks. Describe how you would approach debugging this problem.

Read to the type of error and refer to line where it breaks if applicable. Commonly if it was a multi-dict error, verify if form fields have the name attribute and that they are located in the form tag. Otherwise, check to see data if being passed to the request by checking that the url does not contain any form data. If the url is wrong, check urls.py or the submit button link.

1. What are a couple security threats and how do we defend against them?

Sql/code injection through text fields. This can be avoided by using prepared statements where the user input is directly formatted as a string before being inputted into the query.

1. What is the difference between Session, Post, and Cookies?

Session stores information in cookies. Post stores information in request. Cookies hold information encoded in base64.

1. Explain why and when we use session.

We use session when we want to store some type of data when the user revisits the webpage or does some action (temporary data).

1. What is an ORM and why do we use it?  What are its advantages and also its disadvantages.

ORM – object relational model. ORM allows for easy manipulation of the database for complex queries.

1. In your models, you may make a class User with the following code: class User(models.Model): Why do we have models.Model inside the parentheses?

The reason is to allow us to manipulate the User table through an object with built in methods provided by the ORM such as all, filter, and get.

1. In your models, you may make a class UserManager with the following code: class UserManager(models.Manager): Why do we have models.Manager inside the parentheses?

This is to inherit the User.objects methods, while the additional code in our class lets us override it with more methods.

1. What is self and why does it appear in methods that we define in a class?

Self refers the instance of the class self was called from and it appears as it is implicitly passed when we call methods of the class.

1. What is the \_\_init\_\_ method in a class?

The \_\_init\_\_ method is the constructor of the class that is used to instantiate the class when called.

1. Name 2 HTTP Verbs and when would we use each

GET – visiting/navigating a page

POST – Submitting a form

1. What is RegEx and what do we use it for?

RegEx is a sequence of characters that define a search pattern and it is use to validate complex strings such as emails.

1. On large web applications, what are the benefits of using a framework?

Being able to have highly modular and maintainable code, higher levels of abstraction that improve readability and probability of bugs, and more organized file structure

1. What does a templating engine do for us?

Templating engine allows us to reuse HTML pages while also incorporating python into the HTML to produce dynamic content allowing for personalization based on the user or route.

1. What are 3 different type of database table relationships?

Many to Many, One to One, One to Many

1. Why do we use routes and how do they work?

We use routes to differentiate different features of our websites and routes work by reading the additional information appended to our base url from the http get request.

1. What is a virtual environment and why do we use it?

A virtual environment allows for installation of libraries/scripts separate from the system environment. This allows for encapsulation of required dependencies a web app needs while avoiding conflicts on future apps that require a different version of that dependency.

1. Explain what this code does: “from flask import Flask”.

From the flask library, import the flask class.

1. What is the importance of normalizing your database?

Mainly to avoid repeating data in the database.

1. What is an API?

Application program interface – Server that interacts with the database and returns useful data usually in the form of JSON when a request is sent.

1. What is AJAX and why do we use it?

Asynchronous javascript and XML is a web dev. technology – Used to retrieve data from the backend without interfering with behavior and display of current page.

1. What is the difference between an HTTP request/response and an AJAX request/response?

Ajax sends the data url encoded whereas http sends the data json form.

1. What is the difference between client and server validation, and when do we use either or both?

The difference is where the validation occurs where one is in the frontend and one is in the backend.

1. What are the major differences between Flask and Django?

Flask is often used for smaller projects as routes, views, and controllers all occur in the server.py. Whereas in Django it is split into separate files. Django uses regular expressions to parse the routes whereas for flask it is written as a standard string. In flask, the request object is implicit while in Django it is explicit.

1. (VB) What are differences between tuples, lists, and dictionaries.

Tuples – immutable array

Lists – mutable array

Dictionaries – key value pairs