Course:	**Web Programming**	**Course Code:**	**CS-406**
Program:	**BS (Computer Science)**	**Semester:**	**Fall 2019**
Duration:	**60 Minutes**	**Total Marks:**	**50**
Paper Date:	**11/09/2019**	**Weight**	**12.5**
Section:	**A&B**	**Page(s):**	**3**
Exam:	**Midterm-II**	**Reg. No.**	

Instruction/Notes: *Paper is open book and open notes.*
You have to solve the paper according to content covered in class i.e. via nodejs or .net.
Use sheet to answer your question.
Use MVC structure for design and development

Question 1 (40 points)

Alex wants an E-Commerce site for selling some products, most of these products relate to the pets, including their food, clothes, cages etc. He wants a system such that he can add all the products from back-end and then have their listing on the front-end for the users. Listing may have several multi-level categories like birds and further birds category can have a category as parrots, pigeons etc.

Alex wants to display a general listing for all the products plus he also wants to have listing specific to a category. The listing for the bird category includes all the listings of its sub-category i.e. parrot, pigeons etc. He also wants a search form on each listing template from where a user can search for a specific product in a specific or general listing.

- Animal (category)
  - Cats (subcategory)
    - Products
  - Dogs
    - Products
- Birds
  - Parrot
    - Products
  - Pigeon
    - Products
- and so on.

He also wants to have multiple types of subscription for his customers to buy a product. Subscription can be of minimum every month to every year.

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1. Write down the db schema for the above scenario including products, users and orders. There should be multiple tables/collections. Also, explain the relations between tables/collections. (5)
2. Write down the endpoints via API/views for the following output. You have to follow the MVC structure and write the endpoint with its controller and db modal for queries.

   Note: You don't have to render the data at frontend. Just pass the data to the endpoint in desired format e.g json

   a) Create new endpoint i.e. http://example.com/product/insert and **Insert the product with the following data(5)**
      i. Name: Dog food
      ii. Category: Animal
      iii. Subcategory: Dog
      iv. Price
   b) Create new endpoint i.e. http://example.com/products and display the products list from all categories in desc order (orderby name). (5)
   c) Create new endpoint for categories ie. http://example.com/products/{category} and display the product based on selected category e.g. Animals (5)
   d) Create new endpoint i.e. http://example.com/products/{search_query} and display the product name based on search e.g. (5)
      i. If user enters "A", the products starting with the letter "A" will be fetched and if the user enters "Aliquam" the products name started with "Aliquam" will be displayed and so on.
   e) Create a new endpoint i.e. http://example.com/reporting and display/send the last month sales statistics from orders table/collection. The report should include the following
      i. Total sales of the last month for
         1. Each product (5)
         2. Each category (5)
         3. Each subcategory (5)
         4. Note: You can consider the below picture as a reference to show the stats/count/sum.

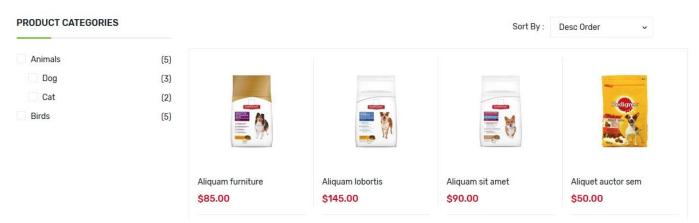| Course:	Web Programming	Course Code:	CS-406
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The screenshot above will give you an idea of what the website look alike.

Question 2 (10 points)

Short questions

3. **Explain what is routing in MVC? (5)**
4. **What you know that I have not asked from the Mid-II course outline? (5)**

Good Luck!