

**Objectives:** Draw the class diagram and implement classes with Inheritance relationship.

**Instructions:** Write the code in either repl.it or any C++ IDE you are familiar with. Upload your repl.it solution URL or the C++ source code you wrote for the lab (zip all the files) in the Lab Submission Link provided.

**Read the scenario given below and complete the following tasks.**

Canny pets store is a store that sells German Shepherd, Bulldog, Golden Retriever and Shih Tzu puppies. There are many important details that must be stored about these puppies. In addition, many functionalities are necessary to handle these data of the puppies. Hence the owner of Canny pet store has requested a software development company to build a system to handle information of the pets. Following are the important details of each different type of pets described by the Canny pet store owner.

- German Shepard is originated from Germany. These are called as working dogs. The life span of a German Shepard is 10.5 years. All German Shepard puppies in the Canny pet store are in four outdoor cages named as Cage GA and Cage GB. Each German Shepard puppy is allocated for one of these cages. Tracking the cage of a German Shepard puppy is a key feature required in the system. Sometimes puppies are transferred from one cage to another. The system should provide a feature to change the cage as well.
- Bulldog got originated from United Kingdom. Bulldogs are even called British Bulldog and English bulldog. The average life span of a bulldog is 9 years. Bulldogs are grown as pets. All Bulldog puppies in Canny pet store are gifted from overseas. It is important to record the original owner of all Bulldog puppies in the system.
- Golden Retriever is originated from United Kingdom. These are used as guide dogs. The average life span of a Golden Retriever is 12 years. There are many Golden Retriever puppies in Canny pet store. Therefore, all (and only) Golden Retriever puppies are given a name.

- Shih Tzu is originated from China. It is available in some colors like brindle red, gold, etc. Shih Tzu are grown as pets. The average life span of Shih Tzu is 14 years. All Shih Tzu puppies in the Canny Pet store are imported from China, Japan, Malaysia, or Thailand. It is important that the system stores the imported country of each Shih Tzu puppy.
- In addition to the facts mentioned above of each specific dog breed, it is important to track the gender, age, weight and height of each puppy in Canny pet store.
- Following charts shows the how Pedigree dog food cups are given to the puppies in Canny pet store.

Breed	Weight	Cups Per Day
German Shepard	Less than 4kg	4 cups
	4kg – 7 kg	5 cups
	More than 7kg	6 cups
Bulldog	Less than 3kg	5 cups
	3kg – 5kg	7 cups
	More than 5kg	8 cups
Golden Retriever	Less than 3kg	3 cups
	3kg – 6kg	4 cups
	More than 6kg	5 cups
Shih Tzu	Less than 2kg	2 cups
	2kg – 4kg	3 cups
	More than 4kg	4 cups

- Price per cup of Pedigree dog food is Rs. 100. The system should provide a function to calculate the weekly cost of Pedigree dog food for each puppy.

Software development team has selected to implement the system using object-oriented style with C++ programming language. Imagine that you are member of the software development team and perform following tasks.

**Task 1:** Sketch the complete class diagram for the above scenario.

**Task 2:** Implement all classes for the system.

**Note:** Add all necessary functions (in both Task 1 and Task 2) including default constructor, overloaded constructor, setters, getters, and destructors for all classes.

**Task 3:** Following are the puppies currently in the Canny pet store. Create objects for each of these puppies.

- 3-month-old German Shepard male puppy in Cage GA. Its weight is 5kgs and height is 25cm.
- 5-month-old German Shepard female puppy in Cage GB. Its weight is 8kgs and height is 38cm.
- 1-month-old Bulldog male puppy gifted by William George. Its weight is 2kgs and height as 10cm.
- 2-month-old Golden Retriever male puppy named as Toby. Its weight is 2kgs and height is 18cm.
- 3-month-old Golden Retriever male puppy named as Timmy. Its weight is 3kgs and height is 22cm.
- 2-month-old Golden Retriever female puppy named as Shina. Its weight is 4kgs and height is 20cm.
- 3-month-old Golden Retriever female puppy named as Shiba. Its weight is 5kgs and height is 21cm.
- 2-month-old Shih Tzu male puppy from China. Its weight is 5kgs and height is 19cm.
- 1-month-old Shih Tzu female puppy from Malaysia. Its weight is 1kg and height is 12cm.

**Task 4:** Get the weekly cost for Pedigree dog food of each puppy and calculate the total weekly cost for Pedigree dog food of all puppies. Print the total weekly cost for Pedigree dog food of all puppies as the output.