General characteristics of Phylum: Arthropoda (jointed feet):

1. **Body is segmented**, bilaterally symmetrical, triploblastic, and truly coelomated, having exoskeleton and different number in feet. The Body is divided into 3 segments; Head, Thorax and Abdomen.
2. **Digestive system** is complete; mouth, oesophagus, gizzard, stomach, intestine and anus.
3. **Respiratory system** is consisted either of trachea, body lung or gills.
4. **Circulatory system** is an open system consisted of body cavity (hemocoel) is filled with colorless blood, dorsal heart and arteries but without capillaries.
5. **Excretory system** is consisted of Malpighian tubules or green glands.
6. **Nervous system** is consisted of a pair of ganglia (brain), a pair of nerve cord and a pair of ganglia in each segment.
7. **Reproduction is sexual** by female-male copulation with internal or external fertilization. Sexes are mostly separated. Male reproductive system is of two testes and Female reproductive system is consisted of two ovaries.
8. Lifecycle includes **indirect growth (with larva)** undergoes moulting to become adult. Egg → Larval (Instar) stage → Adult.

Phylum: Arthropod is divided into FIVE Classes, are as follow:

1. **Class: Crustacea, example; Crayfish, Crab, Copepod, Daphnia, Lobsters, Shrimp**
2. **Class: Arachnida, example; Spiders, Scorpion, Mites and Ticks.**
3. **Class: Insecta, example; Pediculus humanus capitis, Thrips, Bee, Locust**
4. **Class: Chilopoda, example; Scolopendra sp.**
5. **Class: Diplopoda, example; Julus sp.**

1. Class: Crustacea (crusted body): crustaceans. Mostly aquatic, with gills; cephalothorax usually with dorsal carapace; biramous appendages, modified for various functions; head appendages consisting of two pairs of antennae, one pair of mandibles, and two pairs of maxillae; development primitively with nauplius stage.

Kingdom: Animalia
Subkingdom: Metazoa
Phylum: Arthropoda
Class: Crustacea
1. Order: Decapoda

2. Order: Cladocera

3. Order: Cyclopodia

1/Order: Decapoda

***Astacus sp.* (Cray fish)**

1. Body is divided into **cephalothorax** (which consist of 6 cephalic +8 all thoraces segments) and **abdomen** (consist of six segments), Last abdominal segment ended with conical structure called telson.
2. The carapace covered the cephalothorax.

1/Order: Decapoda

***Cancer sp*. (Crab)**

1. The cephalothorax is covered by a large carapace (Head bear three pairs of Maxillipeds + Thorax bears five pairs of appendages).
2. The abdomen is reduced in to thin triangular and it is composed of six segments.

1/Order: Decapoda

***Homarus* sp. (Lobster)**

1. The cephalothorax which fuses the head and the thorax, both of which are covered by a chitinous carapace, and the abdomen.
2. Have 10 walking legs; the front three pairs bear claws.

1/Order: Decapoda

***Gamarus* sp. (Shrimp)**

1. The **cephalothorax** (Head bear three pairs of Maxillipeds + Thorax bears five pairs of appendages), and the muscular **abdomen** has six segments.
2. The carapace is more cylindrical, long antennae, reaching more than twice the body length.

2/Order: Cladocera

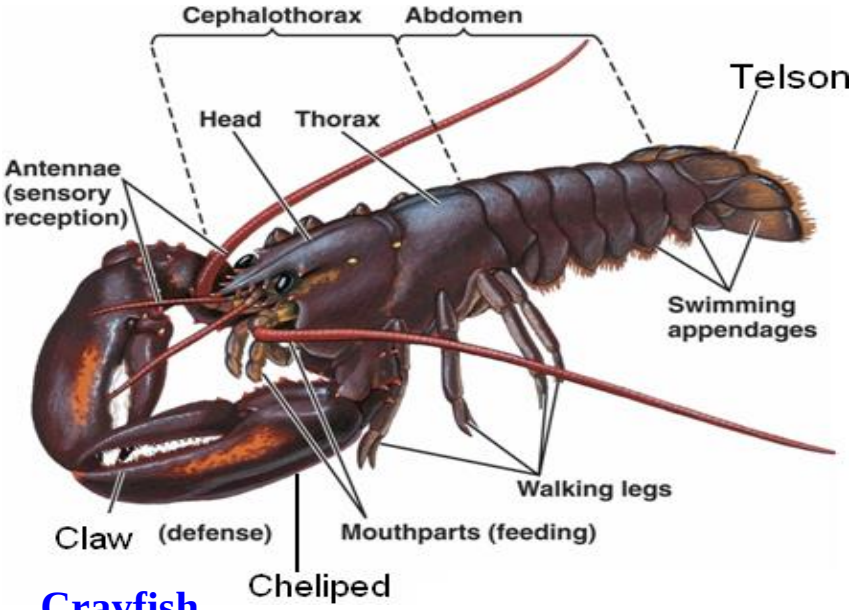
Daphnia sp.

1. The body is egg-like, bilaterally compressed, with along dorsal spine.
2. Carapace usually transparent bivalves covering the trunk (body) but not the head.

3/Order: Cyclopodia

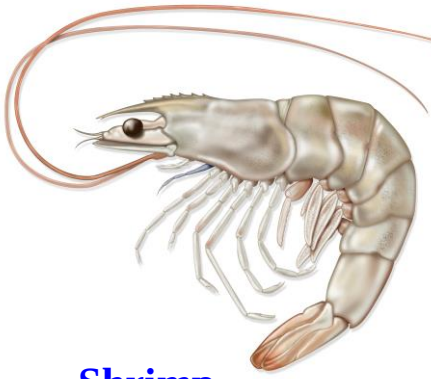
Cyclops sp.

1. The cephalothorax (head + two thoracic segments), Thoracic region (five free segments) and abdomen (three segments).
2. Last abdominal segment bear a pair of caudal styles.
3. Female bears two egg sacs carried laterally on the first abdominal segment.



Crayfish
Astacus sp.

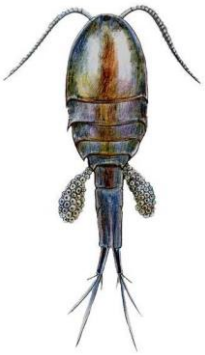
Crab
Cancer sp.



Shrimp
Gamarus sp.

Daphnia sp.

Lobster sp.



Copepod
(Cyclops sp.)