Assignment 3

Question 1:

Let A = {c, d, f, g}, B = { f, j }, and C = {d, g}. Answer each of the following questions. Give reasons for your answers.

1. Is B ⊆ A?

**ANS= No as j ∈ in A**

1. b.IsC ⊆ A?

**ANS= yes as d,g ∈ in A**

1. Is C ⊆ C?

**Yes has same elements**

1. d.IsC a subset of A?

**yes as set A contains elements of set C**

Question 2:

a. Which of the following sets are equal to A = {0, 1, 2}

B = {x ∈ R|−1 ≤ x < 3}

**ANS = no as they are not equal as B has more elemnts**

C = {x ∈ R|−1 < x < 3}

**NO as they do not have same elements**

D= {x ∈ Z|−1 < x < 3}

**Yes as same elements**

E= {x ∈ Z+ |−1 < x < 3}

**No as not the same elements**

1. Is 4 = {4}?

**No because 4 is an element and {4} represents a set that contains 4**

1. How many elements are in the set {3, 4, 3, 5}?

**ANS= 3**

1. How many elements are in the set {1, {1}, {1, {1}}}?

**ANS= there are 3 elements**

Question 3:

1. Is 2 ∈ {2}?

**Yes because 2 is an element that belongs to the set**

1. How many elements are in the set {2, 2, 2, 2}?

**There is 1 element**

1. How many elements are in the set {0, {0}}?

**There is 2 elements**

1. Is {0} ∈ {{0}, {1}}?

**Yes 0 exist in the set**

1. Is 0 ∈ {{0}, {1}}?

**No 0 is an element not a set in braces**

1. Is 3 ∈ {1, 2, 3}?

**Yes 3 is a element of set**

1. Is 1 ⊆ {1}?

**No 1 is an element not a subset**

1. Is {2} ∈ {1, 2}?

**no 2 is a set ∈ {1, 2}**

1. Is{3} ∈ {1, {2}, {3}}?

**yes**

1. Is 1 ∈ {1}?

**Yes 1 belongs to the set**

1. Is {2} ⊆ {1, {2}, {3}}?

**No it is an element of the set not subset**

1. g. Is {1} ⊆ {1, 2}?

**Yes every element is a subset of the set**

1. Is1∈ {{1}, 2}?

**no**

1. Is {1} ⊆ {1, {2}}?

**Yes element is a subset**

1. Is{1} ⊆ {1}?

**Yes element is a subset**

Question 5:

Write a C++ program that has five functions:

1. Implement union of two sets
2. Implement intersection of two sets
3. Implement complement of set
4. Implement difference of two set
5. Implement symmetric difference of two sets

For Q5, You need to display a menu to the user consists of all those operations, user can input the sets or you can use predefined sets and you need to submit the source code and the output.