7. Implementation of the problem solving strategies: either using Forward Chaining or Backward Chaining

a)Forward Chaining

```
database = ["Croaks", "Eat Flies", "Shrimps", "Sings"]
knowbase = ["Frog", "Canary", "Green", "Yellow"]

def display():
    print("\n X is \n1..Croaks \n2.Eat Flies \n3.shrimps \n4.Sings ", end='')
    print("\n Select One ", end='')

def main():
    print("*-----Forward--Chaining-----*", end='')
    display()
    x = int(input())
    print(" \n", end='')
    if x == 1 or x == 2:
        print(" Chance Of Frog ", end='')
    elif x == 3 or x == 4:
        print(" Chance of Canary ", end='')
    else:
        print("\n-------In Valid Option Select --------", end='')
```

```
    if x >= 1 and x <= 4:
        print("\n X is ", end='')
        print(database[x-1], end='')
        print("\n Color Is 1.Green 2.Yellow", end='')
        print("\n Select Option ", end='')
        k = int(input())
        if k == 1 and (x == 1 or x == 2):  # frog0 and green1
            print(" yes it is ", end='')
            print(knowbase[0], end='')
            print(" And Color Is ", end='')
            print(knowbase[2], end='')
        elif k == 2 and (x == 3 or x == 4):  # canary1 and yellow3
            print(" yes it is ", end='')
            print(knowbase[1], end='')
            print(" And Color Is ", end='')
            print(knowbase[3], end='')
        else:
            print("\n---InValid Knowledge Database", end='')

if __name__ == "__main__":
    main()
```

Output

```
*-----Forward--Chaining-----*
 X is
1..Croaks
2.Eat Flies
3.shrimps
4.Sings
 Select One
 1

 Chance Of Frog
 X is Croaks
 Color Is 1.Green 2.Yellow
 Select Option
 1
 yes it is Frog And Color Is Green
```

b)Backward Chaining

```
database = ["Croaks", "Eat Flies", "Shrimps", "Sings"]
knowbase = ["Frog", "Canary"]
color = ["Green", "Yellow"]

def display():
    print("\n X is \n1.frog \n2.canary ", end='')
    print("\n Select One ", end='')

def main():
    print("*-----Backward--Chaining-----*", end='')
    display()
    x = int(input())
    print(" \n", end='')
    if x == 1:
        print(" Chance Of eating flies ", end='')
    elif x == 2:
        print(" Chance of shrimping ", end='')
    else:
        print("\n-------In Valid Option Select --------", end='')
```

```
    if x >= 1 and x <= 2:
        print("\n X is ", end='')
        print(knowbase[x-1], end='')
        print("\n1.green \n2.yellow")
        k = int(input())
        if k == 1 and x == 1: # frog0 and green1
            print(" yes it is in ", end='')
            print(color[0], end='')
            print(" colour and will ", end='')
            print(database[0])
        elif k == 2 and x == 2: # canary1 and yellow3
            print(" yes it is in", end='')
            print(color[1], end='')
            print(" Colour and will ", end='')
            print(database[1])
        else:
            print("\n---InValid Knowledge Database", end='')

if __name__ == "__main__":
    main()
```

Output

```
*-----Backward--Chaining-----*
 X is
1.frog
2.canary
 Select One
 1

 Chance Of eating flies
 X is Frog
1.green
2.yellow
 1
 yes it is in Green colour and will Croaks
```