**Exercise 3.6 KEY**

(Objective 3.8)

**1. Clunker Motors Inc. is recalling all vehicles from model years 1995-1998 and 2004-2006. Write a program to read a model year. Display a message “Please recall!” if the value of modelYear does fall within the two recall ranges; Otherwise, display a message “No need for a recall”.**

1. System Analysis: What is(are) the input(s) and output(s)?

Input: model year

Output:a message to indicate recall or not

1. Assume your manager asks you to complete this program by using a TWO way decision selection statement. What should be the condition? How to represent it using a Boolean expression (may use logical operator) in Python?

Condition in English: model year fall within the range **1995-1998 or range 2004-2006**

Condition in Python:

(1995<=modelYear<=1998) or (2004<=modelYear<=2006)

1. System Design: List the steps to get output(s) from input(s)

Step 1: ask user to enter a model year

If (1995<=modelYear<=1998) or (2004<=modelYear<=2006):

Step 2: print please recall

Else

Step 3: print no need for a recall

D. Write your program.

modelYear=int(input('Enter a model year:'))

if (1995<=modelYear<=1998) or (2004<=modelYear<=2006):

    print("please recall")

else:

    print("no need for a recall")

**2. Let us simulate a lottery system. Write a program and read two numbers from user. One is the guess number; The other is the lottery number. The award will be calculated according to the rules below.**

**a. award is $1000 if guess number is the same as lottery number.**

**b. award is $500 if distance between guess number and lottery number is less than 3**

**c. award is $100 if distance between guess number and lottery number is less than 6**

**d. award is zero in other cases**

1. System Analysis: What is(are) the input(s) and output(s)?

Input: guess , lottery

Output: value of award

1. Assume your manager asks you to complete this program by using a Multiple way decision selection statement. What should be the condition to set award as $500? How to represent it using a Boolean expression (may use logical operator) in Python?

Condition: **if distance between guess number and lottery number is less than 3**

Boolean Expression:

Method 1: 0<guess-lottery<3 or -3<guess- lottery <0

Method 2: -3<guess-lottery<3

C. System Design: List the steps to get output(s) from input(s)

Step1: get guess number

Step 2: get lottery number

if guess same as lottery:

Step 3: set award as $1000

Else if distance between guess number and lottery number is less than 3:

Step 4: set award as $500

Else if distance between guess number and lottery number is less than 6:

Step 5: set award as $100

Else

Step 6: set award as 0

Step 7: print award

D. Write your program.

guess=int(input("Enter a guess number"))

lottery=int(input("Enter a lottery number"))

if guess == lottery:

      award=1000

elif -3<guess-lottery<3:

      award=500

elif -6<guess-lottery<6:

      award=100

else:

      award=0

print("You win $"+str(award))