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Subject - AI ML Assignment 12

1)import random

def guess\_game():

# Generate a random number between 1 and 50

actual\_number = random.randint(1, 50)

attempts = 5

print("Welcome to the Guess Game!")

print("Guess the number between 1 and 50.")

while attempts > 0:

try:

guess = int(input("Enter your guess: "))

if guess < 1 or guess > 50:

print("Think within the limits 1-50 only!")

continue

if guess == actual\_number:

print("Congratulations! You guessed the correct number!")

return

if guess < actual\_number:

print("Hint: Think of a bigger number!")

else:

print("Hint: Think of a smaller number!")

attempts -= 1

print("Attempts left:", attempts)

except ValueError:

print("Invalid input. Please enter a valid number.")

print("Game over. You have run out of attempts.")

print("The actual number was:", actual\_number)

guess\_game()

2)x = int(input("Enter the value of x: "))

y = int(input("Enter the value of y: "))

z = int(input("Enter the value of z: "))

n = int(input("Enter the value of n: "))

coordinates = [[i, j, k] for i in range(x + 1) for j in range(y + 1) for k in range(z + 1) if (i + j + k) != n]

print("List of possible coordinates:")

print(coordinates)

3)n = int(input("Enter the number of commands: "))

list\_ = []

for \_ in range(n):

command = input("Enter the command: ").split()

if command[0] == "insert":

index = int(command[1])

element = int(command[2])

list\_.insert(index, element)

elif command[0] == "print":

print(list\_)

elif command[0] == "remove":

element = int(command[1])

list\_.remove(element)

elif command[0] == "append":

element = int(command[1])

list\_.append(element)

elif command[0] == "sort":

list\_.sort()

elif command[0] == "pop":

list\_.pop()

elif command[0] == "reverse":

list\_.reverse()

4)n = int(input("Enter the number of students: "))

student\_records = {}

for \_ in range(n):

name, \*marks = input("Enter the name and marks: ").split()

marks = list(map(int, marks))

student\_records[name] = marks

query\_name = input("Enter the name of the student to query: ")

if query\_name in student\_records:

marks = student\_records[query\_name]

average = sum(marks) / len(marks)

print("{:.2f}".format(average))

else:

print("Student not found.")

1. a)def bubble\_sort(arr):

n = len(arr)

# Traverse through all array elements

for i in range(n - 1):

# Last i elements are already in place

for j in range(n - i - 1):

# Swap if the element found is greater than the next element

if arr[j] > arr[j + 1]:

arr[j], arr[j + 1] = arr[j + 1], arr[j]

return arr

b)def insertion\_sort(arr):

n = len(arr)

# Traverse through 1 to n

for i in range(1, n):

key = arr[i]

j = i - 1

# Move elements of arr[0..i-1], that are greater than key, to one position ahead

while j >= 0 and arr[j] > key:

arr[j + 1] = arr[j]

j -= 1

arr[j + 1] = key

return arr

c)def selection\_sort(arr):

n = len(arr)

# Traverse through 0 to n-1

for i in range(n - 1):

# Find the minimum element in the unsorted part of the list

min\_idx = i

for j in range(i + 1, n):

if arr[j] < arr[min\_idx]:

min\_idx = j

# Swap the found minimum element with the first element of the unsorted part

arr[i], arr[min\_idx] = arr[min\_idx], arr[i]

return arr