KARIYA RAJ 21162101011

ALGORITHM ANALYSIS AND DESIGN

PRACTICAL -9

You are working at the cash counter at a fun-fair, and you have three types of coins available to you in infinite quantities (coins are Rs. 1, Rs. 4 and Rs. 6). You are required to calculate the minimum numbers of coins required for changing the value of Rs. 9.
Design the algorithm for the same and implement using the programming languageof your choice.

CODE:

```
def minCoins(target, coins):
n = len(coins)
dp = [float('inf')] * (target + 1)
dp[0] = 0
coinUsed = [[] for _ in range(target + 1)]

for i in range(1, target + 1):
for j in range(n):
if i >= coins[j]:
if dp[i - coins[j]] + 1 < dp[i]:
dp[i] = dp[i - coins[j]] + 1
coinUsed[i] = coinUsed[i - coins[j]] + [coins[j]]
return dp[target], coinUsed[target]


coins = list(map(int, input("Enter coin denominations separated by spaces:
").split()))
target_value = int(input("Enter the target value: "))

min_num_coins, coins_used = minCoins(target_value, coins)
print(f"Minimum number of coins required to make Rs. {target_value} is
{min_num_coins}")
print("Coins used:", coins_used)
```

KARIYA RAJ 21162101011