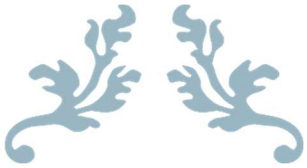

FINDING ITEMS USING LINEAR SEARCH: ONLINE JERSEY STORE

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Module 1

Finding Items Using Linear Search: Online Store Implementation – Brandon Everett

Introduction: For my programming assignment, I wanted to show how linear search works in a real situation. I decided to make a program that searches through NFL jerseys because I buy jerseys online sometimes, and figured it would be a good lesson to see how it could work. My program looks through a list of jerseys and finds ones that match what someone types in.

Implementation: I wrote my program in Python since that's what we have been using. The program keeps track of jerseys by storing things like the player's name, team, number, and price. When someone searches for something, the program checks each jersey to see if it matches.

```python
#Search Algorithm
def search_jerseys(jerseys, search_word):

    found_jerseys = []
    #Search in 'player' and 'team'
    for jersey in jerseys:
        if (search_word.lower() in jersey['player'].lower() or
            search_word.lower() in jersey['team'].lower()):
            found_jerseys.append(jersey)

    return found_jerseys
```

Figure 1: Search Algorithm Implementation

Here's what happens when the program runs and searches for ‘cardinals’:

```
What Jersey are you Looking for: cardinals

Found these Cardinals jerseys:
Kyler Murray #1 - $129.99
```

Figure 2: Sample Search Results

Time Complexity: According to “What is linear search?” linear search has O(n) time complexity. This means my program must look at each jersey one at a time until it finds what it's looking for.

External Factors: Some things that affect how well my program works are how many jerseys are in the list and what people are searching for. Right now, it works fine because I only have a few jerseys in my test data, but it might be slower with hundreds of jerseys.

Challenges Faced: The biggest problem I had was figuring out where to start. I spent a lot of time just staring at the blank screen trying to figure out how to begin. When I finally started coding, I kept getting errors because I forgot little things like colons and indentation. My first version also crashed if someone typed in nothing or just spaces.

I also struggled with the dictionary part because I kept mixing up the syntax for accessing dictionary values. Sometimes I'd write jersey[player] instead of jersey['player'] and get errors. Eventually, I figured it out.

Skills Learned: This project helped me get better at Python programming. It helped me understand how dictionaries work, and I learned how to make a program that doesn't crash when people type unexpected things. I also got better at fixing errors in my code instead of just giving up and starting over.

Results: My program works like it's supposed to. If you search for "Cardinals" or "chiefs" (uppercase or lowercase), it finds the right jerseys. I tried to keep it as simple as possible, but it does what the assignment asked for.

Discussion: Even though linear search isn't the fastest way to find things, it worked fine for this assignment. The program shows that I understand how to make a basic search function and use it with real data.

Conclusion: This assignment taught me how to use linear search in a real program. Using NFL jerseys as my example helped me understand how the search would work in a real store. The program might be simple, but hopefully it shows that I learned what the assignment was trying to teach.

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