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CS 176 – Lab Exercise on Association Rules

Support Threshold = 15% or 0.15 Minimum Frequency = 0.15 \* 12 = 1.8 = **2**

Pass 1:

|  |  |  |
| --- | --- | --- |
| **Itemset** | **Frequency** | **Support** |
| Hotdog Sandwich | 6 | 0.5 |
| Chicken Rice | 4 | 0.34 |
| Cheeseburger | 4 | 0.34 |
| Fries | 9 | 0.75 |
| Spaghetti | 8 | 0.67 |
| Sundae | 4 | 0.34 |

Pass 2:

|  |  |  |
| --- | --- | --- |
| **Itemset** | **Frequency** | **Support** |
| {Hotdog Sandwich, Chicken Rice} | 2 | 0.17 |
| ~~{Hotdog Sandwich, Cheeseburger}~~ | ~~1~~ | ~~0.08~~ |
| {Hotdog Sandwich, Fries} | 3 | 0.25 |
| {Hotdog Sandwich, Spaghetti} | 5 | 0.42 |
| {Hotdog Sandwich, Sundae} | 2 | 0.17 |
| ~~{Chicken Rice, Cheeseburger}~~ | ~~0~~ | ~~0~~ |
| {Chicken Rice, Fries} | 3 | 0.25 |
| {Chicken Rice, Spaghetti} | 3 | 0.25 |
| ~~{Chicken Rice, Sundae}~~ | ~~0~~ | ~~0~~ |
| {Cheeseburger, Fries} | 4 | 0.34 |
| {Cheeseburger, Spaghetti} | 2 | 0.17 |
| ~~{Cheeseburger, Sundae}~~ | ~~1~~ | ~~0.08~~ |
| {Fries, Spaghetti} | 5 | 0.42 |
| {Fries, Sundae} | 3 | 0.25 |
| ~~{Spaghetti, Sundae}~~ | ~~1~~ | ~~0.08~~ |

Pass 3:

|  |  |  |
| --- | --- | --- |
| **Itemset** | **Frequency** | **Support** |
| ~~{Hotdog Sandwich, Chicken Rice, Fries}~~ | ~~1~~ | ~~0.08~~ |
| {Hotdog Sandwich, Chicken Rice, Spaghetti} | 2 | 0.17 |
| ~~{Hotdog Sandwich, Chicken Rice, Sundae}~~ | ~~0~~ | ~~0~~ |
| {Chicken Rice, Fries, Spaghetti} | 2 | 0.17 |
| ~~{Chicken Rice, Fries, Cheeseburger}~~ | ~~0~~ | ~~0~~ |
| ~~{Chicken Rice, Spaghetti, Cheeseburger}~~ | ~~0~~ | ~~0~~ |
| ~~{Chicken Rice, Fries, Sundae}~~ | ~~0~~ | ~~0~~ |
| ~~{Hotdog Sandwich, Fries, Sundae}~~ | ~~1~~ | ~~0.08~~ |
| {Hotdog Sandwich, Fries, Spaghetti} | 2 | 0.17 |
| {Cheeseburger, Fries, Spaghetti} | 2 | 0.17 |
| ~~{Cheeseburger, Fries, Sundae}~~ | ~~1~~ | ~~0.08~~ |
| ~~{Hotdog Sandwich, Fries, Cheeseburger}~~ | ~~1~~ | ~~0.08~~ |
| ~~{Hotdog Sandwich, Spaghetti, Cheeseburger}~~ | ~~1~~ | ~~0.08~~ |

The 3-frequent itemset(s) are {Hotdog Sandwich, Chicken Rice, Spaghetti}, {Chicken Rice, Fries, Spaghetti}, {Hotdog Sandwich, Fries, Spaghetti}, and {Cheeseburger, Fries, Spaghetti}.

Association Rules:

1. {Hotdog Sandwich, Chicken Rice} -> {Spaghetti}

* Confidence = 0.17 / 0.17 = 1
* Lift = 0.17 / [0.17 \* 0.67] = 1.49

1. {Hotdog Sandwich, Spaghetti} -> {Chicken Rice}

* Confidence = 0.17 / 0.42 = 0.40
* Lift = 0.17 / [0.42 \* 0.34] = 1.19

1. {Chicken Rice, Spaghetti} -> {Hotdog Sandwich}

* Confidence = 0.17 / 0.25 = 0.68
* Lift = 0.17 / [0.25 \* 0.5] = 1.36

1. {Chicken Rice, Fries} -> {Spaghetti}

* Confidence = 0.17 / 0.25 = 0.68
* Lift = 0.17 / [0.25 \* 0.67] = 1.01

1. {Chicken Rice, Spaghetti} -> {Fries}

* Lift = 0.17 / 0.25 = 0.68
* Confidence = 0.17 / [0.25 \* 0.75] = 0.91

1. {Fries, Spaghetti} -> {Chicken Rice}

* Lift = 0.17 / 0.42 = 0.40
* Confidence = 0.17 / [0.42 \* 0.34] = 1.19

1. {Hotdog Sandwich, Fries} -> {Spaghetti}

* Confidence = 0.17 / 0.25 = 0.68
* Lift = 0.17 / [0.25 \* 0.67] = 1.01

1. {Hotdog Sandwich, Spaghetti} -> {Fries}

* Confidence = 0.17 / 0.42 = 0.40
* Lift = 0.17 / [0.42 \* 0.75] = 0.54

1. {Spaghetti, Fries} -> {Hotdog Sandwich}

* Confidence = 0.17 / 0.42 = 0.40
* Lift = 0.17 / [0.42 \* 0.5] = 0.81

1. {Cheeseburger, Fries} -> {Spaghetti}

* Confidence = 0.17 / 0.34 = 0.5
* Lift = 0.17 / [0.34 \* 0.67] = 0.75

1. {Cheeseburger, Spaghetti} -> {Fries}

* Confidence = 0.17 / 0.17 = 1
* Lift = 0.17 / [0.17 \* 0.75] = 1.33

1. {Fries, Spaghetti} -> {Cheeseburger}

* Confidence = 0.17 / 0.42 = 0.40
* Lift = 0.17 / [0.42 \* 0.34] = 1.19