

# GRAPH THEORY

**PROJECT: Pilgrimage cost  
Optimization Utilizing Graph Theory.**

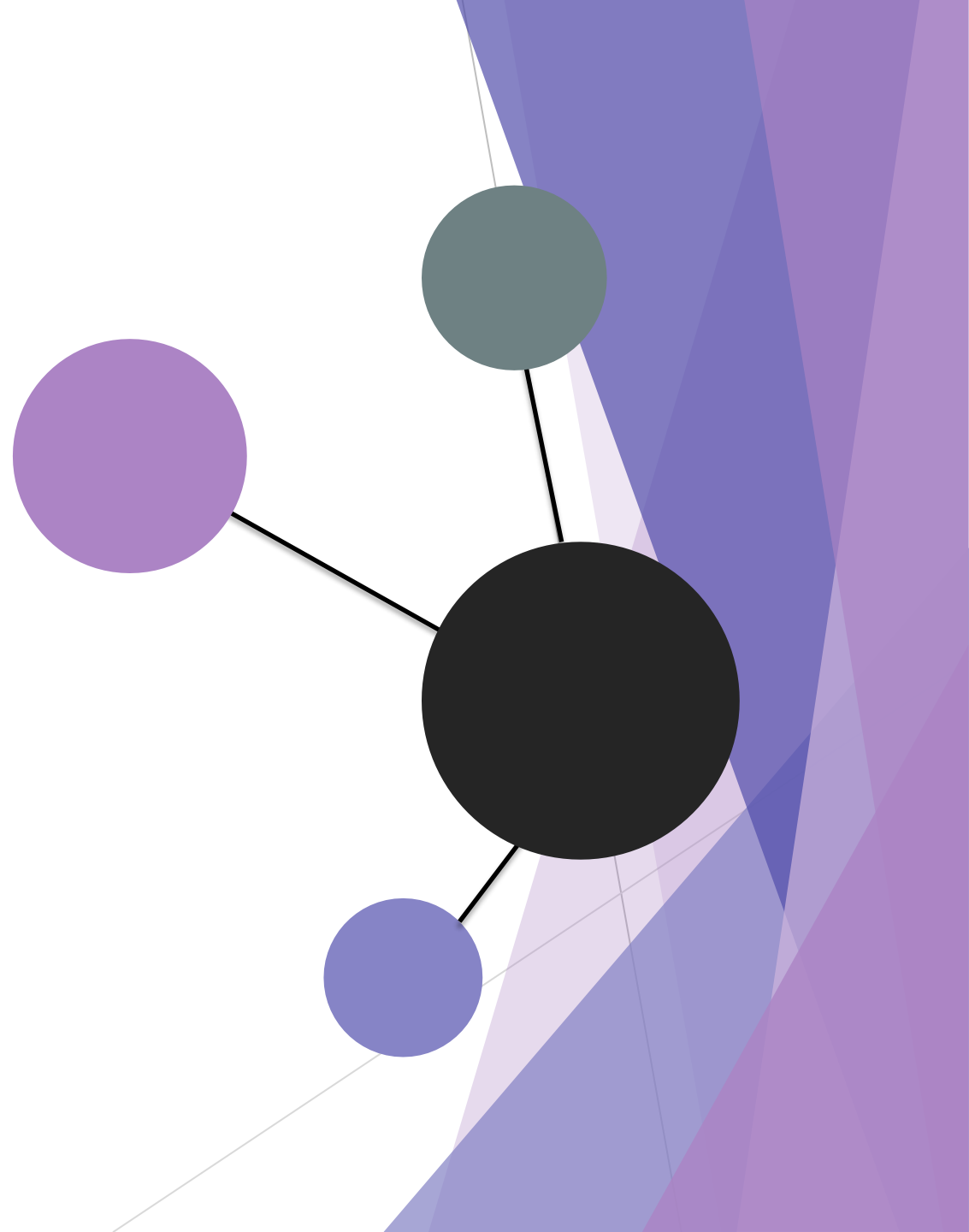
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## **Description:**

**Pilgrimage cost optimization utilizing graph theory is a project aimed at assisting pilgrims in planning their pilgrimage journeys efficiently while minimizing costs. The project focuses on providing a comprehensive platform that helps pilgrims find the most cost-effective routes.**

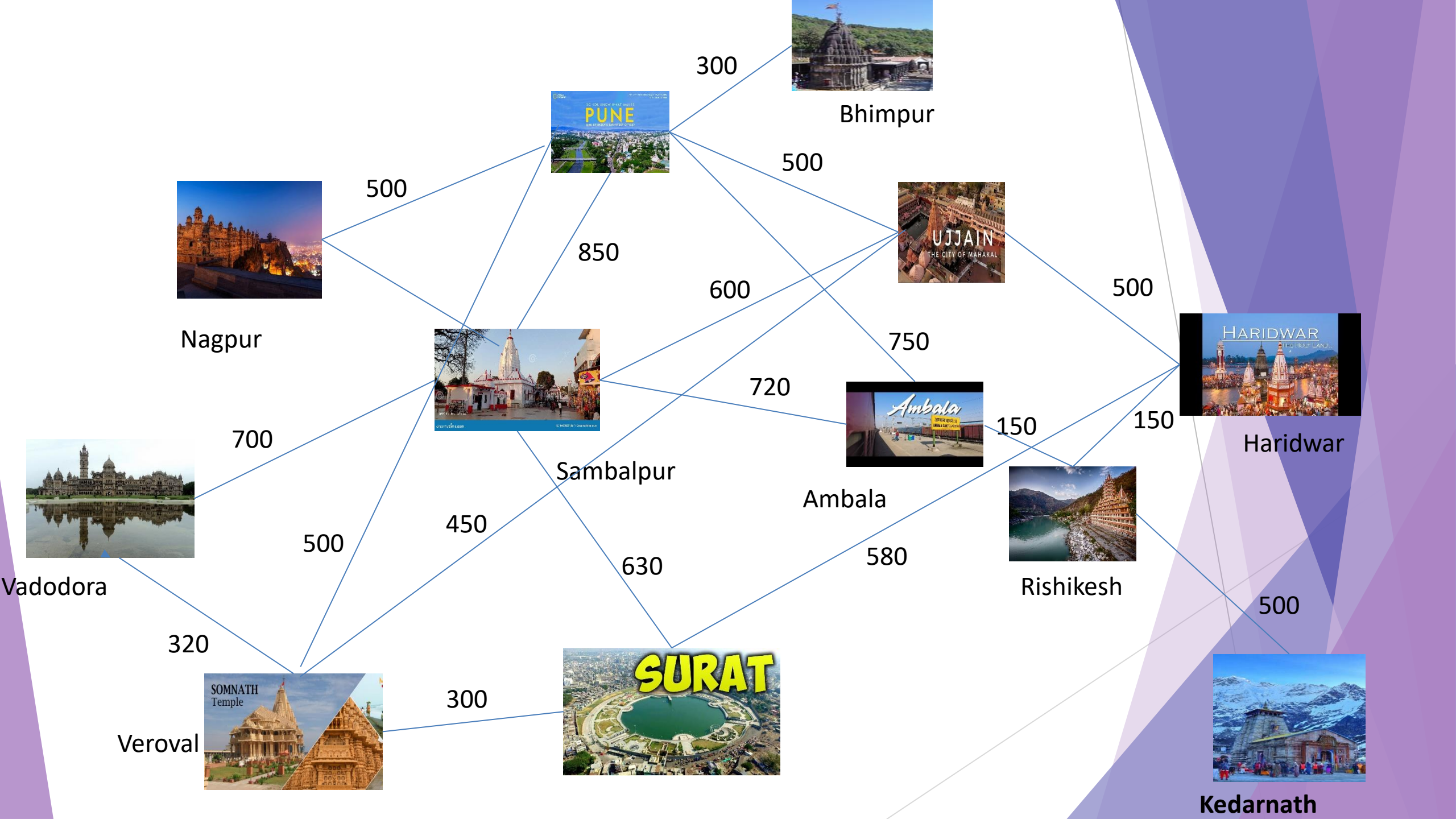
**It utilizes advanced algorithms, such as dijkstra's algorithm to calculate the shortest or most cost-effective routes between pilgrimage sites.**

**It prioritizes routes that minimize travel expenses while ensuring timely arrival at each pilgrimage destination.**

## PSEUDO CODE:

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```
1. function dijkstra(G, S)
2.   for each vertex V in G
3.     distance[V] <- infinite
4.     previous[V] <- NULL
5.     If V != S, add V to Priority Queue Q
6.   distance[S] <- 0
7.   while Q IS NOT EMPTY
8.     U <- Extract MIN from Q
9.     for each unvisited neighbour V of U
10.      tempDistance <- distance[U] + edge_weight(U, V)
11.      if tempDistance < distance[V]
12.        distance[V] <- tempDistance
13.        previous[V] <- U
14.   return distance[], previous[]
```



Nagpur



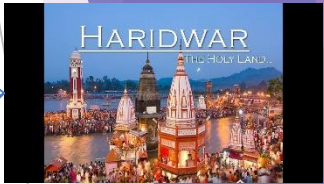
Pune



Bhimpur



UJJAIN



Haridwar



Sambalpur



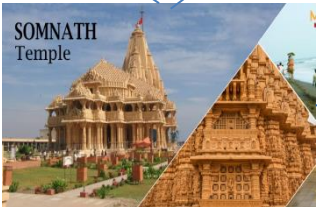
Ambala



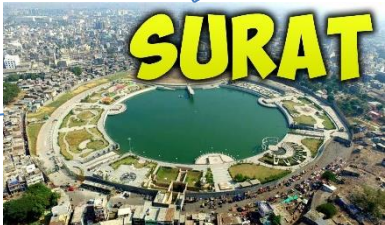
Rishikesh



Vadodora



Veroval



SURAT



Kedarnath

# POSSIBLE PATHS :

## From Sambalpur to Veroval:

**Sambalpur → Surat → Veroval(Somnath Temple) :For this route total cost is Rs.930 via train.[MIN COST ROUTE]**

Sambalpur → Vadodra → Veroval (Somnath Temple): For this route total cost is Rs.1020 via train.

Sambalpur → Ujjain → Veroval(Somnath Temple): For this route total cost is Rs.1050 via train.

## From Sambalpur to Bhimpur(Bhimashankar Temple):

Sambalpur → Nagpur → Pune → Bhimpur: For this route total cost is Rs.1300 via train.

Sambalpur → Ujjain → Pune → Bhimpur: For this route total cost is Rs.1400 via train.

**Sambalpur → Pune → Bhimpur: For this route total cost is Rs.1150 via train.[MIN COST ROUTE]**

## From Sambalpur to Kedarnath Temple:

Sambalpur → Ujjain → Haridwar → Rishikesh → Kedarnath: For this route total cost is Rs.1680 via train.

**Sambalpur → Ambala CNT → Rishikesh → Kedarnath: For this route total cost is Rs.920 via train.[MIN COST ROUTE]**

Sambalpur → Pune → Ambala CNT → Rishikesh → Kedarnath: For this route total cost is Rs.1800 via train.

## From Sambalpur to Ujjain(Mahakaleswar Temple):

**Sambalpur →Ujjain : For this route total cost is Rs.600 via train.[MIN COST ROUTE]**

Sambalpur→ Pune→ Ujjain : For this route total cost is Rs.1350 via train.

## From Sambalpur to Haridwar :

Sambalpur→ Ujjain→ Haridwar : For this route total cost is Rs.1100 via train.

**Sambalpur→ Ambala CNT→ Rishikesh→ Haridwar : For this route total cost is Rs.1020 via train.[MIN COST ROUTE]**

Sambalpur→ Surat→ Haridwar : For this route total cost is Rs.1210 via train.

# OUTPUT :

SOURCE	DESTINATION	OPTIMAL ROUTE	MINIMUM COST
SAMBALPUR	VEROVAL(SOMNATH TEMPLE)	SAMBLPUR→SURAT→VEROVAL	930
SAMBALPUR	BHIMPUR(BHIMSHANKAR TEMPLE)	SAMBALPUR→PUNE→BHIMPUR	1150
SAMBALPUR	KEDARNATH	SAMBALPUR→AMBALA CNT→RISHIKESH→KEDARNATH	920
SAMBALPUR	UJJAIN	SAMBALPUR→UJJAIN	600
SAMBALPUR	HARIDWAR	SAMBALPUR→AMBALA CNT→RISHIKESH→HARIDWAR	1020

Thank You