

College of Engineering

CMP 433: Artificial Intelligence

Project 2

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**Sculptures Puzzle:**

Solution:

IceSwan placed on table: 3

GoldLion placed on table: 1

MarblePyramid placed on table: 2

**Map Colouring:**

Number of solutions (with min. 4 colors): 744

Solution:

Austria: yellow

Czech Republic: blue

Germany: green

Hungary: blue

Italy: blue

Poland: yellow

Slovakia: green

Slovenia: green

Switzerland: red



**Magic Triangle:**

==========MAGIC TRIANGLE WITH 6 CIRCLES==========

Total Number of Possible Solutions for Sum 9 : 6

1

6 5

2 4 3

Total Number of Possible Solutions for Sum 10 : 6

1

6 4

3 2 5

Total Number of Possible Solutions for Sum 11 : 6

2

5 3

4 1 6

Total Number of Possible Solutions for Sum 12 : 6

4

3 2

5 1 6

==========MAGIC TRIANGLE WITH 9 CIRCLES==========

Total Number of Possible Solutions for Sum 17 : 96

1

7 9

6 5

3 4 8 2

Total Number of Possible Solutions for Sum 18 : 0

Total Number of Possible Solutions for Sum 19 : 192

1

9 8

2 6

7 3 5 4

Total Number of Possible Solutions for Sum 20 : 288

1

3 8

7 6

9 2 4 5

Total Number of Possible Solutions for Sum 21 : 192

3

8 7

1 5

9 4 2 6

Total Number of Possible Solutions for Sum 22 : 0

Total Number of Possible Solutions for Sum 23 : 96

7

1 5

6 3

9 4 2 8

**Interview Scheduling:**

Possible Schedules (without considering preferences):

Ali: 3pm, Dan: 4pm, Bob: 2pm, Cyl: 1pm

Ali: 3pm, Dan: 4pm, Bob: 1pm, Cyl: 2pm

Ali: 1pm, Dan: 4pm, Bob: 3pm, Cyl: 2pm

Ali: 1pm, Dan: 4pm, Bob: 2pm, Cyl: 3pm

Ali: 4pm, Dan: 1pm, Bob: 3pm, Cyl: 2pm

Ali: 4pm, Dan: 1pm, Bob: 2pm, Cyl: 3pm

Possible Schedules (considering preferences):

Ali: 3pm, Dan: 4pm, Bob: 2pm, Cyl: 1pm

**Cryptarithmetic Puzzle:**

SEND + MORE = MONEY (without carry)

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9567 + 1085 = 10652

SEND + MORE = MONEY (with explicit carry)

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9567 + 1085 = 10652

(DEC)₈ - (BIN)₈ = (OCT)₈

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(602)₈ - (453)₈ = (127)₈

(602)₈ - (457)₈ = (123)₈

(602)₈ - (153)₈ = (427)₈

(602)₈ - (157)₈ = (423)₈

EXTRA + DAY = LEAP + YEAR

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13467 + 879 = 5170 + 9176

15423 + 839 = 7130 + 9132

14523 + 739 = 6130 + 9132

16523 + 739 = 8130 + 9132

16534 + 749 = 8140 + 9143

16723 + 539 = 8130 + 9132

16734 + 549 = 8140 + 9143

14723 + 539 = 6130 + 9132

15823 + 439 = 7130 + 9132

13867 + 479 = 5170 + 9176

**Zebra Problem:**

Number of Solutions: 1

Contents of House 1

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Color: Yellow

Nationality: Norwegian

Profession: Diplomat

Drink: Water

Pet: Fox

Contents of House 2

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Color: Blue

Nationality: Italian

Profession: Doctor

Drink: Tea

Pet: Horse

Contents of House 3

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Color: Red

Nationality: English

Profession: Sculptor

Drink: Milk

Pet: Snails

Contents of House 4

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Color: White

Nationality: Spaniard

Profession: Violinist

Drink: Fruit Juice

Pet: Dog

Contents of House 5

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Color: Green

Nationality: Japanese

Profession: Painter

Drink: Coffee

Pet: Zebra

**N-queens Problem:**