Question 1: Self introduction

1.1 Photo

Figure 1: This is a picture of me, Vladimir Hugec

1.2 Hobbies

1. Tennis
2. Computers
3. Soccer

Question 2: Previous Knowledge

2.1 Known Topics

1. InsertionSort, MergeSort
2. Dynamic Programming
3. BFS, DFS

2.2 Familiar Topics

1. big O and Omega Notation
2. Deterministic selection (median-finding)
3. Hashing
4. BST and relationship to QuickSort
5. NP-hardness
6. Reductions
7. Approximation

2.3 Unknown Topics

1. Recurrences by trees and substitution
2. Master method
3. Sorting lower bound
4. CountingSort and RadixSort
5. IRV and QuickSort Analysis
6. Randomized Selection
7. Augmented trees
8. Red-Black trees

9. Amortization
10. Topological sort and SCC
11. Kruskal's algorithm
12. Prim's algorithm
13. SSSP

Question 3: Mock Exercise

Lemma 1. *Since we know the order in which the cities are visited, and we know the population of each of those cities, we can simply write a program that essentially models the first calendar year and returns the city with the highest population completed in that year.*

Proof. We have a list of cities and their populations

1. C1:P1
2. C2:P2
3. C3:P3
4. .....
5. Cn:Pn

We start counting on a hypothetical Jan 1st or day 1/365. For each day P1/2 until P1 = 0. Then we move to P2 and repeat P2/2 until P2 = 0. Once the day is 365/365 we stop. If the city that we were currently counting, Ci, has Pi = 0 then include it in the cities completed. Then we are left with a list of cities completed in the first year and we sort by the largest Pn and return the first element.

□

Question 4: Fun Challenges

4.1 Formula

$$\sqrt{\alpha + \Theta - \frac{x}{2} + y^2}$$

4.2 Table

Monday	Tuesday	Wednesday	Thursday	Friday
1:30 Tennis	1:30 Comp170 4:30 170 Rec. 6:00 Comp160	5:30 160 Recitation	1:30 Comp170 6:00 Comp160	

4.3 Figure

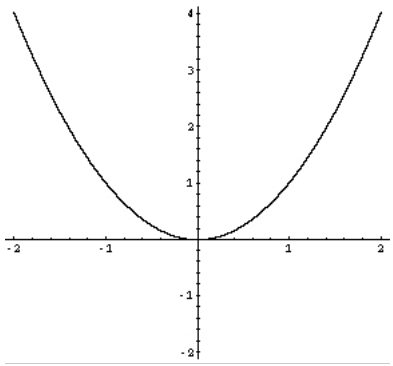

Figure 2: this is a graph of $y = x^2$

4.4 Command

The most 'fun' command I've come across is the Coffee stains package by Hanno Rein. It draws a coffee stain on the document like the one on the top of this page!