Introduction to Part II

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Introduction

In Part-I we have learnt about Computation, Universal Turing Machines and Complexity Classes. We have seen how powerful the idea of Reduction can be in classifying "problems" in "certain classes" and have demonstrated the same in the shrewd proof stating that it is NP-Complete to win a generalized level in the Game Celeste.

Now in this part, we shall talk further about Games - how to model them, classify them, provided generalized theorems and discuss how and why having knowledge about such aspects of different games is important not only to our understanding of Complexity Theory but also to the world of Computation, in general.

Why Games?

Games involve the most vibrant (and in many cases even the oldest) set of computational problems. Chess, for example, is an ancient game believed to have originated in India around 1500 years ago and has been proven to be EXPTIME-Complete (in exclusion of the fifty-move rule) in 1981.

Games serve as models of computation which have been used quite prevalently used to mathematically model real-life scenarios. For example, classical game theory deals with several games involving rational decision making strategies and has found applications in computer science, biology and social sciences.

Games not only serve as a means of understanding computation but also decision making and behavioral relations. This is why they have been often found associated with numerous breakthroughs in artificial intelligence. It is quite astonishing as how games often are found to be embedded in deep computational problems and yet require incredibly less to none formal understanding to be played.

Moreover, puzzles and simulations can often be helpful to encapsulate real life problems especially in fields like bioinformatics.

Thus, it would indeed be surprising if understanding of games and augmented reality would provide us with no further **help in the understanding of the nature** as well as in **trying to answer some of the major philosophical questions** encompassing life and reality.