Course Title: Introduction to Numeration Systems
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This lecture is devoted to a survey of various numeration systems. Numeration system is the way to present numbers by words over a set of symbols, e.g.: decimal and binary systems. Many different types of numeration systems are used in computer science, coding, number theory and dynamical systems, depending on the purpose in applications. We also include an algebraic preparation for the later courses, like Minkowski embedding. Then we introduce so-called canonical number systems as a model of number system and discuss its basic properties. We then introduce the main idea of "natural extension". This idea stems from ergodic theory and gives a very natural way to associate tilings as a fundamental domain. Finally, we show that there is a systematic way to study its property by automaton. We also focus on numeration on a more general basis such as Pisot numbers. It shares many features with canonical number systems and gives interesting application to number theory. We shall discuss applications and developments in this area as well as open problems.