Games of the stealth strategy genre require precise and time demanding creation of game content in the form of individual level layout. For that reason it is desired to automate this process to decrease its high production cost. One of the alternatives of such automatization are evolutionary algorithms. Within this thesis we are going to show how it is possible to use them to create game levels. We will also introduce the test results of the created levels and compare them to levels created manually. Our results suggest, that evolutionary algorithms are one of the good options for creation of levels for the games of the genre.