Assignment 2

PSO #1

Particle structure: every particle represents **16 start notes** for chords, which are then completed in this way: **2-nd note** in chord is **start note + 4**, **3-rd note** in chord is **start note + 7**.

Particle amount: **5000**

Fitness function: it gets as input array of 16 notes and returns some **real value from 0 to 1**, this value shows how good sounds is this sequence. It does it in this way: every characteristic can achieve maximum 1, then we to get value from 0 to 1, I just divide to number of characteristics. There is 5 characteristics. 1-st one is that melody does not have more than 4 repeating of the same note. 2-nd is that every note lies in right diapason, I have chosen diapason for starting notes from 48 to 72. 3-rd is that difference between 2 neighboring note less than 12. 4-th is that first 5 notes are increasing and 5 last notes are decreasing (in all pleasing sound melody this implies). And 5-th one is that it is in right tonality i.e. C Major.

PSO #2

Particle structure: every particle represents **32 notes**.

Particle amount: **5000**

Fitness function: it gets as input array of 32 notes, array of chord notes and returns some **real value from 0 to 1**, this value shows how good sounds is this sequence. It does it in this way: every characteristic can achieve maximum 1, then we to get value from 0 to 1, I just divide to number of characteristics. There is 6 characteristics. 1-st one is that melody does not have more than 4 repeating of the same note. 2-nd is that every note lies in right diapason, I have chosen

diapason for starting notes from 72 to 96. 3-rd is checks that this note to one or more octave higher than appropriate note from which chord starting (in code it is index / 2 element, because we have 16 chords and 32 notes). 4-th is that difference between 2 neighboring note less than 12. 5-th is that first 10 notes are increasing and 10 last notes are decreasing (in all pleasing sound melody this implies). And 6-th one is that it is in right tonality i.e. C Major.

Both PSOs work until some iteration achieved (10000 in my example) or until getting some best global (in my example it is 0.975 for 1-st PSO and 0.9 for 2-nd PSO).

Overall spent time to get midi file: **3295 milliseconds**

Samatov Almaz BS2-2