# CS5823 Cryptography Project II

Denote the $i$-th prime by $p_i$. For example, $p_1 = 2$ and $p_2 = 3$. Let

$$M = \{\lfloor 10^{100} \sqrt[5]{p_i} \rfloor | 1 \le i \le 100\}.$$

Let $S$ be $(ID/10^8) * 100 * 10^{100} = ID * 10^{94}$, where $ID$ is your ID number, viewed as a decimal integer. Find a subset $T \subseteq M$ such that the sum of all the elements in $T$ is greater than or equal to $S$.

1. Please submit a binary vector $[x_1, x_2, \cdots, x_{100}]$ (formatted as a Sage list) so that $x_i$ is 1 if and only if $\lfloor 10^{100} \sqrt[5]{p_i} \rfloor$ is in the subset $T$. Please discuss the strategy you use in the submission.

2. You should work independently. It is NOT a group project.

3. Your grade depends on the difference between the sum of the subset and $S$. The smaller the difference is, the better grade you will receive.