2021 DINOCRACY

The spies of *Alpha Complex* and *Beta Complex* are very keen on the idea of government — they've supported (and overthrown) a few — and the complexes are themselves *dinocracies*. Appointments and promotions are purely based on a spy's conduct over several lavish dinners.

Under the current regime spies, destined for both complexes, undergo their early training together. At the end of their first year a dinner is held where the entire year's intake are seated around a large *circular* table. At the end of the meal spies are discreetly (and discretely) informed whether they have been assigned to Alpha or Beta Complex. The exact method of selection is unknown, although the correct use of a marrow scoop is a factor.

The following traditions are adhered to:

- Spies are trained in pairs and, to ensure future intercomplex co-operation, one spy from each pair will be assigned to each complex;
- No three adjacently seated spies will be assigned to the same complex;
- Any five adjacently seated spies will have at least two spies assigned to each complex.

Seats are numbered consecutively around the table from 0.

For example, suppose that the spies in seats 0 & 3 trained together, as did those in 1 & 5 and 2 & 4:

- A traditional assignment would see the spies in seats 0, 1 & 4 assigned to Alpha Complex and the other spies to Beta Complex*;*
- Assigning the spies in seats 0, 4 & 5 to Alpha Complex would not be traditional as the seats 0, 4 & 5 are adjacent;
- Assigning the spies in seats 0, 2 & 4 to Alpha Complex would not be traditional as those in seats 2 & 4 trained together.

SAMPLE INPUT

```
6
0 3
5 1
2 4
```

The first line of input will consist of a single *even* integer n, ($6 \leq n \leq 2^{20}$), indicating the number of spies. The next $n/2$ lines will each contain a pair of integers, indicating the seats of two spies who trained together. Each spy will be assigned a single seat and all seats at the table will be occupied by a single spy.

You should output a string of n characters, giving a traditional assignment for the spies. The i^{th} character, `A` or `B`, should indicate whether the spy in the i^{th} seat is assigned to Alpha or Beta Complex respectively. There is always a solution.

SAMPLE OUTPUT

```
AABBAB
```