American Computer Science League

PROBLEM: Given a set of parent-child relationships, report how two individuals are related. Consider the following set of parent-child relationships:

Sam, Len Sam, Moe Faith, Moe Sam, Ken Faith, Stan Moe, Lisa Moe, Dick Moe, Mike Ella, Lisa Stan, Mia Stan, Joe Lisa, Max Rich, Max Mia, Carl	
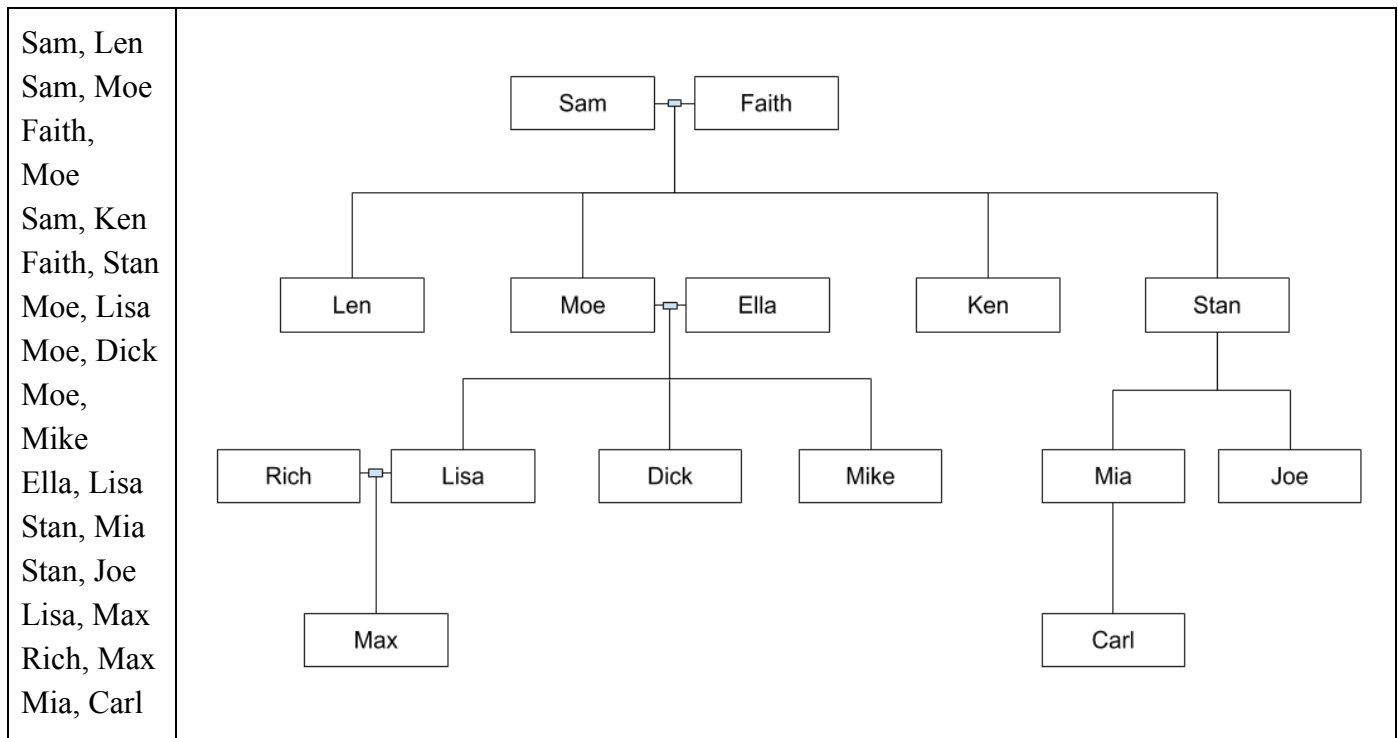
Sam is married to Faith; they have 4 children: Len, Moe, Ken, and Stan. Moe is married to Ella, and they have 3 children: Lisa, Dick, and Mike. Lisa is married to Rich and has one child, Max. Stan has two children: Mia and Joe. Mia has one child: Carl, and there is no spouse given for Mia or for Stan.

Because we are not giving the gender of any person, we will use *pibling* rather than aunts and uncles, and *nibling* rather than nieces and nephews. Also, there is no distinction between "in-laws". For example, Ella, the spouse of Moe, has the exact same parents, siblings, etc. as Moe has.

Here are examples of the relationship of two people in the example above:

> Sam is Moe's parent
> Faith is Mike's grandparent
> Lisa is Sam's grandchild
> Dick and Mia are cousins
> Rich and Joe are cousins
> Dick is Max's nibbling

Carl and Max are second cousins
Sam is Carl's great-grandparent

We guarantee that the input data will be a valid family tree with at most 10 generations. All siblings have the same parents, and a parent will have no more than 5 children. A person has at most 2 parents, and siblings cannot marry each other.

The relationships that will be tested are as follows:

- **spouse**
- **parent, grandparent, great-grandparent** - direct lineage
- **child, grandchild, great-grandchild** - direct lineage
- **sibling** - individuals with the same parents
- **cousin** - individuals whose parents are siblings
- **second cousin** - individuals whose parents are cousins
- **pibling**- Tom is a pibling of Bob, if Tom is a sibling of one of Bob's parents
- **grandpibling** - Ann is a grandpibling of Bob, if Ann is a sibling of one of Bob's grandparents
- **nibling** - Fran is a nibling of Betty, if one of Fran's parents is a sibling of Betty
- **grandnibling** - Ned is a grandnibling of Joy, if one of Ned's grandparents is a sibling of Joy

INPUT: A set of family trees with relationships to report about each tree. For each data set, there will be a number representing how many parent-child relationships to read in followed by the family tree data which is a set of parent-child relationships, one relationship per line. This will be followed by a number representing the number of outputs requested. For each output requested, the relationships data will be a pair of names in the family tree, one relationship per line.

OUTPUT: For each relationship line, report the relationship of the second person to the first. There will be 10 relationships to report. We guarantee that the relationship will be one of the above.

Output is being scored by a computer, so you must print the relationships exactly as they appear above: all lowercase letters, spelled as above, a single space between the words in *second cousin*, a dash (with no spaces) in *great-grandparent*, and *great-grandchild*.

The Sample Data below shows 3 family trees. The first one is a tree with 5 people. The 2nd and 3rd are the tree above, with the relationships expressed differently.

American Computer Science League

2020 Finals ● Program 4: Family Tree ● Senior Division

SAMPLE INPUT (shown in 3 columns):

4	14	14
Moe Lisa	Sam Len	Ella Lisa
Moe Dick	Sam Moe	Mia Carl
Moe Mike	Faith Moe	Ella Dick
Ella Mike	Sam Ken	Lisa Max
2	Faith Stan	Faith Ken
Moe Ella	Moe Lisa	Rich Max
Mike Ella	Moe Dick	Sam Ken
	Moe Mike	Moe Lisa
	Ella Lisa	Sam Stan
	Stan Mia	Stan Mia
	Stan Joe	Sam Moe
	Lisa Max	Faith Len
	Rich Max	Ella Mike
	Mia Carl	Stan Joe
	4	4
	Dick Max	Max Carl
	Mike Faith	Mike Joe
	Faith Mike	Rich Mike
	Carl Ken	Dick Stan

SAMPLE OUTPUT:

1. spouse
2. parent
3. nibling
4. grandparent
5. grandchild
6. grandpibling
7. second cousin
8. cousin
9. sibling
10. pibling

TEST INPUT (shown in 3 columns):

10	10	20
Pat Rich	Robin Dale	Zion Pat
Rich Jo	Pat Robin	Zion Rich
Pat Robin	Sam Rich	Rich Hayden
Sam Rich	Pat Quinn	Pat Max
Pat Quinn	Pat Rich	Logan Pat
Robin Dale	Robin Bobby	Zion Wyatt
Robin Bobby	Noel Bobby	Wyatt Quinn
Noel Bobby	Jo Lynn	Quinn Robin
Jo Lynn	Quinn Max	Terry Max
Quinn Max	Rich Jo	Hayden Alex
2	3	Alex Noel
Sam Lynn	Quinn Lynn	Faith Robin
Bobby Sam	Lynn Sam	Quinn Kaden
	Dale Jo	Max Jesse
		Robin Brook
		Sam Noel
		Max Dale
		Sam Emory
		Quinn Val
		Noel Gabriel
		5
		Val Robin
		Rich Emory
		Jesse Wyatt
		Dale Robin
		Pat Kaden