Input:

| Item | CollectedItem |
| --- | --- |
| AA | ASD |
| AA | SDF |
| AA | FGD |
| AA | GFH |
| AA | GHF |
| AA | VND |
| AA | GRS |
| AA | ABC |
| ABC | SS |
| ABC | DBG |
| ABC | FGFGD |
| ABC | XCV |
| ABC | BCVX |
| ABC | CVBV |
| SS | SDF |
| SS | SSS |
| SS | DFG |
| SS | DDF |
| SS | DDFF |
| XCV | XVCC |
| XCV | AAAA |
| AAAA | CSD |
| X | Y |
| Z | V |
| ZZ | ZZZ |
| XYZ | XYZZ |
| XYZZ | ABD |
| V | VV |
| VV | VVV |

Output:

| Item | CollectedItem | Level |
| --- | --- | --- |
| AA | ASD | 1 |
| AA | SDF | 1 |
| AA | FGD | 1 |
| AA | GFH | 1 |
| AA | GHF | 1 |
| AA | VND | 1 |
| AA | GRS | 1 |
| AA | ABC | 1 |
| ABC | SS | 2 |
| ABC | DBG | 2 |
| ABC | FGFGD | 2 |
| ABC | XCV | 2 |
| ABC | BCVX | 2 |
| ABC | CVBV | 2 |
| SS | SDF | 3 |
| SS | SSS | 3 |
| SS | DFG | 3 |
| SS | DDF | 3 |
| SS | DDFF | 3 |
| XCV | XVCC | 3 |
| XCV | AAAA | 3 |
| AAAA | CSD | 4 |
| X | Y | 1 |
| Z | V | 1 |
| ZZ | ZZZ | 1 |
| XYZ | XYZZ | 1 |
| XYZZ | ABD | 2 |
| V | VV | 2 |
| VV | VVV | 3 |

Note:

1. All the items called by AA have level as 1 as AA is not previously called.
2. All the items called by ABC have their level as 2 because ABC is previously called by AA.
3. All the items called by SS have their level as 3 because SS was called by ABC and ABC was called by AA.

AA—>ABC —>SS—>all the items called by SS

1 2 3

1. All the items called by XCV have their level as 3 because XCV was called by ABC and ABC was called by AA.

AA—>ABC —>XCV—>all the items called by SS

1 2 3

1. All the items called by AAAA have their level as 4 because AAAA was called by XCV which was called by ABC and ABC was called by AA.

AA—>ABC —>XCV—>AAAA—>CSD

1 2 3 4

1. All the items called by X,Z,ZZ AND XYZ have their level as 1 as these items are not previously called.
2. Items called by XYZZ have their level 2 because XYZZ was called by XYZ.

XYZ→ XYZZ —>ABD

1 2

1. Items called by V have their level 2 as V was called before by Z

Z—-V—-VV

1 2

1. Items called by VV have their level as 3 because VV was by V and V was called by Z.

Z—-V—-VV—-VVV

1 2 3