TI-FLOW Pack Explanation

One of the key features of TI-FLOW is support for dynamic pack loading. To accomplish this, each pack has a unique identifier that tells TIFLOW which pack has been loaded. Because of this, TIFLOW does not require specific packs to be loaded onto the calculator. TI-FLOW also supports up to 100 packs with unique identifiers. TI-FLOW will also remember score information for each pack that has been loaded onto the calculator. If a user loads a pack, plays several levels, and then deletes the pack, the score information will be saved in case they wish to play that pack again.

Because TI-FLOW is written in pure TI-BASIC, it is not possible to utilize AppVars or other data structures that can store pack data in the archive. To combat this, we decided that it would be best to store the packs as separate programs and require the user to run the pack program to start the game. This allows the user to keep packs that they currently do not wish to play in the archive, and UnArchive them before gameplay.

We have also implemented a compression system that allows us to store many levels in a relatively small space. On average, each level in the packs that ship with TI-FLOW takes up only 14 bytes. This is accomplished through the implementation of a base-100 number system that utilizes 1-byte calculator tokens as symbols. By cleverly structuring the compressed data, we eliminate the need for delimiters that take up an additional byte per pack.

Each pack is structured in the following manner:

```
PROGRAM:FLPACKXX
:“[pack number][number of levels][numbers of nodes in each
level][positions of nodes in each level]->Str1
:“[Human readable pack descriptor]->Str2
:pi[e]->X
:prgmTIFLOW
```

Each part of the pack string (`Str1`) is represented by a character from the base-100 decoder string stored in `TIFLOW` (`Str0`). Running the pack program stores the pack string into `Str1`, and it is then decoded by `TIFLOW` using our decoding methods. Although this method makes the main program slightly larger, it provides a massive pack size advantage.