# Swaram Specifications for Padam Validation

## Basic Swarams:

The basic swarms are udAttam (not marked), anudAttam **(q)**   
and Swaritam **(#)**.

Dheerga Swaritam **($)** with double line, is an extension of Swaritam only.

When Swaritam becomes Dheerga Swaritam.

**Note: Baraha Codes given in Bracket**

**Take care whether o and e are represented in small or capital letters**

## Basic Letters

**Vowels Short: a, i small, u small, Ru, lRu**

**Vowels Long: A,I,U,E, ai,O,au,RU,lRU**

**Anuswaram : am**

**Visargam = H**

**Any word/padam ending with m or M is anuswaram letter.**

**Any word/padam ending with H is a visarga letter.**

**Consonants:   
ka varga - k,K,g,G,~g, (caret symbol on key board)  
ca varga - c,C,j, J, ~j  
Ta varga - T, Th, D, Dh, N**

**.ta varga – t,th,d,dh, n**

**Pa varga – p,P,b,B,M or m**

**Others – y,r,l,v,h**

**L is for hard La as in VeLLam for water in Malayalam & Tamil. Used in Baraha and Veda for “agnimILe purohitam”**

**Ushman – s, S, Sh (s for sarawati, S – for Siva Sh for PuShpam)**

Other Vedic Symbols used – **(gm) ,(gg), &** for avagraha , **~M** for Nasal

**Normal Consonants** – any of the code for Consonant +plus vowel sound

**Conjunct consonant** – has two consonant letters without a vowel sound in between like gna, gya, tra, Bya etc.

## Rules for checking Dheerga swaritam:

### At any place in a vedic statement or Padam a long letter has Swaritam but followed by a Conjunct consonant

**Examples**

|  |  |
| --- | --- |
| aÉýhÉÉlÉÉÿliuÉÉ aÉýhÉmÉþÌiÉóè | ÎxjÉýUæ-U…¡æûÿ-xiÉÑ¸ÒýuÉÉóè |
| lÉqÉÉåý ÌlÉwÉýÌ…¡ûhÉåÿ xiÉåýlÉÉlÉÉÇý mÉiÉþrÉåý | lÉqÉþ AÉurÉÉýÍkÉlÉÏÿprÉÉå |
| lÉqÉÉåý uÉëÉiÉåÿprÉÉå | lÉqÉÉåý UjÉåÿprÉÉåý |
| lÉqÉýÈ xÉålÉÉÿprÉ | MüýqÉÉïUåÿprÉ¶É uÉÉåý |

### At the end of a vedic statement or padam which has

**A long letter ending with Swaritam (long letter, visaraga letter or long anuswaram or a halant) Examples**

|  |  |
| --- | --- |
| xÉWûxÉëÉý¤ÉÉrÉþ qÉÏýRÒûwÉåÿ | | lÉÉþiÉiÉÉrÉ kÉ×ýwhÉuÉåÿ | |
| AuÉ þmÉý¶ÉÉ¨ÉÉÿiÉç | AuÉþ mÉÑýUxiÉÉÿiÉç | AuÉÉå¨ÉýUÉ¨ÉÉÿiÉç | | mÉëcÉÉåýSrÉÉÿiÉ |
| AýxqÉÍ³ÉuÉþmÉliÉÑý xÉålÉÉÿÈ | iÉÎlqÉý§É LþÌiÉ mÉýÍjÉÍpÉþ SåïuÉýrÉÉlÉæÿÈ |
| uÉÉýrÉÑ lÉï¤Éþ§É-qÉýprÉåþÌiÉý ÌlÉwšÉÿÇ | mÉÔýwÉÉ UåýuÉirÉluÉåþÌiÉý mÉljÉÉÿÇ | |

**short anuswaram letter Examples**

|  |  |
| --- | --- |
| AuÉþuÉý£üÉUÿÇ | AuÉþ ´ÉÉåýiÉÉUÿÇ |  AuÉþSÉýiÉÉUÿÇ |  xÉËUýwÉÈ mÉÉþiÉÑýlÉ£üÿÇ || | lÉÏýcÉÉiÉÇkÉþ¤rÉiÉý xÉ³É zÉÑwMüÿÇ |  GÌwÉþÍpÉý-xxÉÇpÉ×þiÉýóèý UxÉÿÇ | |

### Dheerga Swaritam after short letters: (08/02/2020)

**Case 1 When th is added after n.**

A hrasva (short) letter is followed a joint letter (conjunct consonant) through a rule and that short letter acquires dheerga swaritam but reflected in the next letter during rendering.

Let us explain this with a direct example:

When **“n”**  is followed by **sa,Sa,Sha,** an **‘th’** is added to smoothen the flow of letters as per Consonant Sandhi rule. When the word before ‘n’ is a short letter(hrasva) and it get a swaritam, it is difficult to render it with the following joint letter (conjuct consonants). The letter is extended to dheerga swaritam, since it is difficult to elongate a short letter, the effect of dheerga swaritam is extended the following letter which is  **‘n’.**

|  |  |
| --- | --- |
| iÉÎxqÉÿljxÉÑmÉýhÉÉåï qÉþkÉÑýM×üiÉç MÑüþsÉÉýrÉÏ | ÎxqÉ, is a short letter.  It is followed by nth, the effect of extending is on ‘**n’.** Though ismi is marked with swaritam and it has acquired dheerga swaritam, the real effect of rendering will be like  iÉÎxqÉlÉçÿ, |
| iÉÎxqÉÿljÉç xÉýuÉïÇ mÉëÌiÉþÌ¸iÉÇ | Same as above |
| AÉýuÉåýzÉrÉþ-Í³ÉuÉåýzÉrÉÿlÉç-jxÉÇýÆuÉåzÉþlÉý- | Here the effect of the dheerga swaritam of **‘ya’** will be extended to **‘n’.** |

**Case 2 Letters gya after short anuswaram**

xÉÿÇ¥ÉýmrÉqÉÉþlÉÉiÉç , xÉÿÇ¥ÉýmÉþlirÉæýlSìÈ , xÉÿÇ¥ÉýmÉrÉþÎliÉ

These words appear in the middle of a mantra. The prefix ‘**saM’** is a short anuswaram. But it is followed by a conjunct consonant **‘j’ and ‘gya’.** It would be difficult to recite only swaritam of ‘saM’ and move to jgya; so ‘saM’ acquires dheerga swaritam. Specific rule covering such instance is being referred to in grammar/vedic books.

### Swaritam before Swarabhakti :

When Swarabhakti of **r.** appears before **s,S,Sh;** the **letter previous to** r. **cannot be a swaritam** if the letter starting with s,S and Sh are simple consonants. The r. is taken as a Swarayukta akshara (normal consonant)

|  |
| --- |
| pÉÉ–ÌaÉlÉóèþ xÉ–liÉqÉjÉÉþ pÉÉ–aÉÇ ÍcÉMüÐþUç.wÉÌiÉ |
| xÉýmiÉ uÉæ zÉÏþUç.wÉýhrÉÉÿÈ mÉëÉýhÉÉÈ | |
| iÉålÉý MüÉåþUç.ÅWÌiÉý xmÉÎ®ïþiÉÑÇ |

**The letters marked in yellow are dheerga letters with swaram followed by a conjunct consonant (joint letter). The letters do not acquire dheerga swaritam.**

**When the letter** Uç., ர், ª is followed by letters of class (xÉ ,ஸ , s), (wÉ, ஷ, r), (zÉ, **Ÿ**, q), W, ஹ t) or (G , *ரு*, E ), as a **rule the ‘r’ is extended to double its maatra value..instead of half. This representation of ‘r’ is called Swarabhakti in technical terms.   
Swara bhakti treated as Swarayukta akSharam only and as a rule does not get Dheerga Swaritam.**

**Exception to 1.1.5 above**

TS 6.3.7.2 the following statement appears twice in this Panchati. The ‘mA’ is a dheerga letter with swaritam followed by ‘r’ but is **not followed** by a **consonant of ‘Sha’** but a **conjunct of ‘ti’ with ‘Sh**’.   
The Dheergam swaritam is retained.

**If the ‘r’ is followed by a Conjunct Consonant of sa,Sa or Sha, ‘r’ is not treated as swarabhakti.**

xÉÇ qÉÉÿÌ¹ï , ஸம் மா**‡**ர்ஷ்டி , sI ix˜ªræy–

**Note: The Part of validating Dheerga Swaritam is a function or part that has been implemented in Jatai and Ghanam Program.**

# Validation Checks if the Padam is typed or input correctly.

## General check:

If the Padam ends in a **H or M(**m) the last letter has swaram it should be marked before H or M not after H or M. That is for Visargam and Anuswaram. If halant (dotted letter as in Tamil) appears at the end of a padam then the swaram is before dotted letter (halant letter) aqvOqcaqt. The Code ‘q’ can be used after halant. But no swaram should be marked after halant except ‘n’. This is a convention but needs to be taken care as ‘t’ or ‘n’ as a halant is actually a part of a letter which it forms with previous letter. E.g pracodayAt

Padam file will use **‘e’ and’o’** in small letters as per Baraha Sanskrit convention. Capital E and ‘O’ shall be replaced with small letters.  
The following wrong coding as convention should be replaced or error message:   
**sh with S, ch – c, bh – B, kh – K, ph – P gh-G**

## The Padam has a single letter

**Check :** The letter can have **either an anudAttam (q) or no marking () UdAttam**. Both are valid. Wrong typing is the responsibility of the Coder.

Examples: **mA,tat, tvam, Sam, yat , A, yAH or   
mEq, tEq, tvAq, naqH, vaqH, mAq, caq**

A single letter anudAttam is for program perspective a Support anudAttam only.

## The Padam has two letters:

**Check**: if first letter is **anudAttam** and then second letter should be **either anudAttam or udAttam.**

**Check : if first letter is udAttam, the second letter shall be Swaritam or Dheerga Swaritam apply above rules.**

**Examples – both anudAtaam -** ruqdraq, aqstuq, kuqruq, aqsyaq eqnaqm

**Examples of first anudAtam next udAttam -** SiqvA, uqta, aqsau

**Example of first udAttam and next Swaritam -**nama#H, viSvA$, hastE$,maya#H,

## The Padam has three or more letters

**Reading in reverse order will help.**

### Last letter is anudAttam:-

1. **Check if the last letter is an anudAttam**, then all the letters in that Padam must be marked in anudAttam only.

Examples - mRuqDaqyaq, aqvOqcaqt, vaqdAqmaqsiq

### Last letter is Swaritam or Dheerga Swaritam

1. **Check if the last letter is a Swaritam or Dheerga Swaritam:**

**Then previous letter shall be udAttam and the letter previous to it shall be anudAttam.**

gaqNAnA$m , maqnyavE$. taqnuvA$, suqmanA$H, aqBita#H mIqDhuShE$, dhRuqShNavE$,

1. **If there are more than three letters,** than the letters previous to that anudAttam which is third from reverse shall also be anudAttam.

Examples: suqmaq~ggala#H , saqhaqsrAqkShAya#

1. If all the preceding letters are anudAttam with no udAttam, give that letter as exception to check coding.   
   Examples: SaqraqvyA$, yAqtuqdhAqnya#H (our nickname for a Swaritam appearing immediately after an anudAttam in vaNangaa mudi (VM) because this holds its position in Swara sandhi. (Part of Swaram specs)

### Last letter is udAttam:

**Condition 1: -** Last letter is UdAttam and the previous all letters are anudAttam it is OK.

Example: praqthaqmaH, aqruqNaH, kaqvIqnam

**Condition 2** – **Last letter is UdAttam and a previsous set of letters are UdAttam** (one or more) but one of the following letter in reverse order should be a swaritam or Dheerga swaritam. Then previous letters to this swaritam combination shall be UdAttam followed by one or more anudAttams or end with first letter in UdAttam

Example: Siqvata#mA, hira#NyabAhave, hari#keSAya, giri#Santa  
saqspi~jja#rAya, Aqkraqndaya#te, AqvyAqdhinI#nAm, aqvaqsarpa#ti

**Technically in a single word padams after a swaritam or dheerga swaritam no swaram will occur. The Part after swaritam is called Ekasruti.**

**Condition 2** – **Last letter is UdAttam and a previous letter is anudAttam**

**Then the letter third from last shall be either an udAttam then it should be preceded by a Swaritam;**

**If the third letter from last shall be a swaritam, then previous shall be udAttam or UdAttam which in itself be preceded by anudAttams.**

Example: dyAvA#pRuthiqvI.

Here the Ekasruti concept does not apply because it is a joint word with dyAvA#+pRuthiqvi. These will be checked by us again.

**Condtion 4** – There is an occurrence of two UdAttams together in any Padam that needs to be given as an exception list:

These are all words joined with two padams.

aqgnIShomau$, aqgnIShomA$ByAm , miqtrAvaru#Nau, miqtrAvaru#NayoH

**Condition 5: Letters with two swaritams get formed when two padams are joined. Give a list of exceptions.**

Here if you work back there is a dheerga swaritam preceded by udAttam and anudAttm..then another udAttam occurs check if it preceded by Swaritam, UdAttam and anudAttam combine.

These are again words with two padams joined together.

dyAvA#pRuthiqvIByA$m

**Input file: word file – padams are separated by vertical line**

**Each input panchati has title in form n.n.n.n - padam**

**Output Expected:**

1. **Any validation fails for a Padam – output the Panchati Number as n.n.n.n – Padam in word file highlighted** 
   1. **Give padam count number – Padam as input in file plus give validation failed message – for swarita/dheerga swarita rule or other conditions not fulfilled**
   2. **If Exception list appears – words with two Swaritams (2.4.3 Condition 5), with two udAttams together (2.4.3 Condition 4) or Padams with no udAttam (2.4.2 – condition 3). All this list in (b) shall have reference like in failed validation – panchati number n.n.n.n – Padam count number- the Padam.**
2. **Notes on Swara Symbol used in Current Program:**

**Currently the program uses special codes for each and every type of swaram though it may bot be marked in vAkyam or padam as per convention. E.g udAttam is not marked but program requires identification.**

**Support anudAttam – w**

**Prime anudAttam – q**

**udAttam - x**

**Swaritam normal – #**

**Dheerga Swaritam - $**

**vaNangaa mudi - /**

**Ekasruti – f**

**Nitya swaram – to confirm with Raja words like trya#mbakam, svi#Shtam where Swaritam appears first in a padam.**