**DOCUMENTATION**

* **DECODER:**

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| --- | --- | --- | --- | --- |
| FUNCTION DEFINITION | INPUT | OUTPUT | DESCRIPTION | SPECIAL CASES |
| char strToChar(string data) | Binary string | Character  representing binary string | Converts a binary string to its equivalent character. |  |
| int binaryToDecimal(int n) | Binary integer | Decimal integer | Converts a binary integer to its equivalent decimal value. |  |
| int stringtoint(string str) | String input | Integer output | Converts string to integer value. | Does not work for long data. |
| string inttostring(int val) | Integer | String | Converts integer to string data. |  |
| int hextodec(char \*num) | Character array | Integer | Converts hexadecimal to decimal. |  |
| string decimaltobin(int n) | Decimal integer | Binary String | Converts decimal to binary. |  |

**MAIN FUNCTION:**

Firstly , we traverse string until space or null character occur and store the hex string in a new string “s” and then we convert that hex value to binary to check the following cases.

**Vector** : store size after corresponding braces

Vmap: map size vector m(index)

Varr: array size vector a(index)

**Stack** : to keep track of open parenthesis and brackets.

**if(bin[0]=='1' && bin[1]=='0' && bin[2]=='1')** : FOR MAP

firstly, we take flag value which is the double the size of the map. So it can help us to find where to put colon(:) and comma(,) in the map. We take flag value because map has in a key and value so, in order to keep track of them we use flag. At last, we store that flag value in the vector called vmap.

**else if(bin[0]=='1' && bin[1]=='0' && bin[2]=='0')** : FOR ARRAY

in this we simply convert the hex value to int value and find the size of the array and push that size in the vector called varr.

**else if(bin[0]=='0' && bin[1]=='0' && bin[2]=='0')** : FOR INTEGER VALUE

**else if(bin[0]=='0' && bin[1]=='1' && bin[2]=='1')** : FOR TEXT STRING

if we have a string like 63 616161. so we have 63 initially . To take 616161 as a string we simply increment i and then traverse the string and store “616161” in a string called s. and then we pass that string in a function which convert it to its corresponding charcter like “aaa” .

**else if(bin[0]=='0' && bin[1]=='1' && bin[2]=='0')** : FOR BYTE STRING

same as text string.

**else if(bin[0]=='1' && bin[1]=='1' && bin[2]=='1')** : FOR MAJOR TYPE 7 LIKE TRUE, FALSE, NULL

in this we take care of true, false, null value.

**while(a>=0 && varr[a]==0 && st.top()=='[')**

to print the “[“.

**while(m>=0 && vmap[m]==0 && st.top()=='{')**

to print the “{”.