**Declaration CFGs**

**<const> → Str\_const | Char\_const |Number\_const |Bool\_Const | null (keyword)**

**Dec\_var (String or DT 2no cover)**

**Int a = b = c = 4**

**Int a**

**< dec\_var> → DT ID <init\_var> <list\_var>**

**<dec\_var> String ID <init\_var> <list\_var>**

**<init\_var> → = <init\_var\_b> | €**

**<init\_var\_b> --> <OE> iske color ki value ni rhi**

**<list\_var> → , ID <init\_var> <list\_var> | €**

**dec\_obj**

**A a = new A{}**

**<dec\_obj> → ID ID <init\_obj> <list\_obj>**

**<init\_obj> → = new ID { <args-list> } <list\_obj> | ∈**

**<list\_obj> → , ID <init\_obj> <list\_obj> | ∈**

**<args\_list> <OE> <list\_args> | ∈**

**<list\_args> , <OE> <list\_args> | ∈**

**New dec (final left factored, both enum and obj)**

<dec\_obj\_or\_enum> → ID ID <init> <list>

<init> = <init2>

<init> €

<init2> new ID { <args-list> } <list\_obj> | <OE>

<list> , ID <list2>

<list> €

<list2> <init> <list>

**dec\_arr**

**syntax:**

**int arr1mul[i][j][k]....[z]..so on =**

**int arr[i][j] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}, {10, 11, 12}};**

**int arr1[size]={1,2,3} , arr2[4]**

**int arr2[5] = arr3 = { 1,2 , 3}**

**string arr3[6]**

**<dec\_arr> --> DT ID [ <OE> ] <arr\_size> <init \_arr> <list\_arr>**

**<dec\_arr> --> String ID[ <OE> ]<arr\_size> <init\_arr> <list\_arr>**

**<dec\_arr> --> ID ID[ <OE> ]<arr\_size> <init\_arr> <list\_arr> refer to obj or func**

**<dec\_arr> --> dict ID[ <OE> ]<arr\_size> <init\_arr> <list\_arr>**

**Last ki 2 abi add kri hain**

**<arr\_size> --> [ <OE> ] <arr\_size> | €**

**<init\_arr> --> = <init\_arr\_b> | €**

**<init\_arr\_b> -> ID <init\_arr> | <value\_list>**

**<value\_list> --> [ <values> ]**

**<values> <value> <arr\_val> <values’>**

**<values’> , <value> <values’> | €**

**<value> --> <OE> | <value\_list>**

**<list\_arr> --> , ID [ <OE> ] <init\_arr> <list\_arr> | €**

**<arr\_val> --> , <OE> <arr\_val> | €**

**dec\_dict**

**syntax**

**dict a = { key: value, key:value }**

**dict a, b, c**

**dict a = b**

**dict a, b = { key: value, key: value}, c = {}**

**CFG**

**<dec\_dict> Dict ID <init\_dict> <list\_dict>**

**<init\_dict> = <init\_dict\_b> | €**

**<init\_dict\_b> --> ID <init\_arr> | { <values\_of\_dic> }**

**<values\_of\_dic> ID : <OE> <dict\_val> | €**

**<list\_dict> --> , ID <init\_dict> <list\_dict> | €**

**<dict\_val> --> , ID : <OE> <dict\_val> | €**

**dec\_enum**

**Syntax**

**Enum definiton  
  
syntaxes:**

**enum Direction : (**

**North,**

**South,**

**East,**

**West**

**)  
  
enum Direction : (**

**North=33,**

**South=56,**

**East=11,**

**West=66**

**)**

**Example**

**Direction dir = Exp;**

**Direction dir, dir2**

**Direction dir, dir2 = North, dir3 = south**

**CFG:-**

**<dec\_enum> → ID ID <init\_enum> <list\_enum>**

**<init\_enum> → = <OE> | €**

**<list\_enum> → , ID <init\_enum> <list\_enum > | €**

**Final Declarations of all things**

<dec> -> DT ID <dec1>

<dec> -> String ID <dec1>

<dec> -> ID ID <dec2>

<dec> -> dict ID <dec3>

<dec1> -> <init\_var> <list\_var> | [ <OE> ] <arr\_size> <init \_arr> <list\_arr>

<dec2> -> <init> <list> | [ <OE> ]<arr\_size> <init\_arr> <list\_arr>

<dec3> -> <init\_dict> <list\_dict> | [ <OE> ]<arr\_size> <init\_arr> <list\_arr>

**<init\_var> -> = <OE>**

**<init\_var> -> €**

**<list\_var> -> , ID <init\_var> <list\_var>**

**<list\_var> -> €**

**<arr\_size> -> [ <OE> ] <arr\_size>**

**<arr\_size> -> €**

**<init\_arr> -> = <init\_arr\_b>**

**<init\_arr> -> €**

**<list\_arr> -> , ID [ <OE> ] <init\_arr> <list\_arr>**

**<list\_arr> -> €**

**<init\_arr\_b> -> ID <init\_arr>**

**<init\_arr\_b> -> <value\_list>**

**<value\_list> -> [ <values> ]**

**<values> -> <value> <arr\_val> <values’>**

**<values’> -> , <value> <values’>**

**<values’> -> €**

**<value> -> <OE>**

**<value> -> <value\_list>**

**<arr\_val> -> , <OE> <arr\_val>**

**<arr\_val> -> €**

<init> --> = <init2>

<init> --> €

<init2> -> new ID { <args-list> } <list\_obj>

<init2> -> <OE>

<list> --> , ID <list2>

<list> --> €

<list2> --> <init> <list>

**<init\_dict> -> = <init\_dict\_b>**

**<init\_dict> -> €**

**<init\_dict\_b> -> ID <init\_dict>**

**<init\_dict\_b> -> { <values\_of\_dic> }**

**<values\_of\_dic> -> ID : <OE> <dict\_val>**

**<values\_of\_dic> -> €**

**<list\_dict> -> , ID <init\_dict> <list\_dict>**

**<list\_dict> -> €**

**<dict\_val> -> , ID : <OE> <dict\_val>**

**<dict\_val> -> €**