

ADT HashMap	
HashMap = {keys [] = <key <sub>1</sub> , key <sub>2</sub> , ..., key <sub>n</sub> >, values [] = <value <sub>1</sub> , value <sub>2</sub> , ..., value <sub>n</sub> >, size= <size>}	
{inv: HashMap.keys [] <key <sub>1</sub> != key <sub>2</sub> != ... !=key <sub>n</sub> >} {inv: hashMap.size >=16}	
Primitives Operations: <ul style="list-style-type: none"> <li>• Create Hash Map: -&gt; HashMap</li> <li>• put: HashMap x Key X Value -&gt; HashMap</li> <li>• size: -&gt; Integer</li> <li>• get Keys: -&gt; Keys []</li> <li>• get Values: -&gt; Values []</li> <li>• contains Key: key -&gt; Boolean</li> <li>• contains Value: value -&gt; Boolean</li> <li>• clear: -&gt; HashMap</li> </ul>	

<b>Create Hash Map:</b>
"It creates a new HashMap with a predeterminate size"
{pre: HashMap== null}
{post: HashMap = {keys [] = {null <sub>1</sub> , null <sub>2</sub> , ..., null <sub>16</sub> }, values [] = {null <sub>1</sub> , null <sub>2</sub> , ..., null <sub>16</sub> }, size =0}}

<b>Put:</b>
"put a key with its representative value"
{Pre: HashMap!= null}
{Post: keys [] = {inputKey <sub>k</sub> }, values [] = {inputValue <sub>k</sub> }, size= size+1}

<b>size:</b>
"return the size of the hash map"
{Pre: HashMap!= null}
{Post: true}

<b>get Keys:</b>
"return the set of keys"
{Pre: HashMap!= null}
{Post: true}

<b>get Values:</b>
"Return the set of values"
{Pre: HashMap!= null}

{Post: true}
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<b>contains Key:</b>
“verify if the given key is on the hash map”
{Pre: HashMap!= null, input key != null}
{Post: true}

<b>contains Value:</b>
“Verify if the given value is on the hash map”
{Pre: HashMap!= null, input value != null}
{Post: true}

<b>clear:</b>
“clean all sets, keys and values. Also, gets size turns to 0”
{Pre: HashMap!= null}
{post: HashMap = {keys [] = {null <sub>1</sub> , null <sub>2</sub> , ..., null <sub>16</sub> }, values [] = {null <sub>1</sub> , null <sub>2</sub> , ..., null <sub>16</sub> }, size =0}}

{Pre:}
{Post:}