How to use

1. Test script brief introduction

Git Repos:
https://sqbu-github.cisco.com/huashi/OpenH264MemCheckTool

Test Script:
For more detail about scripts, please refer to 5.1.2~5.1.4

- **run_ParseMemCheckLog.sh**
  parse memory allocate/free/leak size for one test case
- **run_MememAnalyseForOneYUV.sh**
  test all cases for one YUV and output memory/FPS statistic info
- **run_Main.sh**
  test all YUVs for all cases and output all memory/FPS statistic info
- Other scripts as test tool called by above script
  ```
  run_GetYUVList.sh
  run_GetYUVPath.sh
  run_ParseYUVInfo.sh
  ```

Test case in configuration file:
Using default setting in below cfg files which copied from openh264/testbin/

- Welsenc.cfg
- Layer2.cfg

And combine with below parameters in run_MememAnalyseForOneYUV.sh
```
SliceMode=(0  1  2 3)
SliceNum=(1 4  4 0 )
ThreadNum=(1 2 3 4)
SliceSize=(1500 600)
```

Test codec:
- Origin design
  ```
  Codec version info, refer to Codec_OriginDesign/Codec_Info.txt
  ```

- New design
  ```
  Codec version info, refer to Codec_NewDesign/Codec_Info.txt
  ```

- New design with reallocate step ¼ MaxSliceNumOld
  ```
  Codec version info, refer to
  Codec_NewDesign_Step_1-4/Codec_Info.txt
  ```

- New design with reallocate step 1/3 MaxSliceNumOld
  ```
  Codec version info, refer to
  Codec_NewDesign_Step_1-3/Codec_Info.txt
  ```

Test data:

- Overall data structure
  ```
  TestSpace ="TestData/${Codec}/${Arch}"
  ```
  Example:
  ```
  TestData/Codec_OriginDesign/x86
  TestData/Codec_OriginDesign/x64
  TestData/Codec_NewDesign/x86
  TestData/Codec_NewDesign/x64
  TestData/Codec_NewDesign_Step_1-3/x86
  TestData/Codec_NewDesign_Step_1-3/x64
  TestData/Codec_NewDesign_Step_1-4/x86
  TestData/Codec_NewDesign_Step_1-4/x64
  ```

- Test data file generate by **encoder** for one case
  ```
  TestMemLogFile="${TestSpace}/enc_mem_check_point_${YUVName}_${SliceMode[$i]}_${SliceNum[$i]}_${iThrdNum}_${iSlcSize}.txt"
  ```

- Test data file generate by **run_ParseMemCheckLog.sh** for one case
  ```
  TestAnalyseResult="${TestSpace}/MemAnalyseResut_${YUVName}_${SliceMode[$i]}_${SliceNum[$i]}_${iThrdNum}_${iSlcSize}.txt"
  ```

- Test data file for one YUV by **run_MememAnalyseForOneYUV.sh**
  ```
  TestReport="${TestSpace}/MemReport_For_${YUVName}.csv"
  ```

- Test data file for all YUVs by **run_Main.sh**
  ```
  TestReportForAllYUV="${TestSpace}/MemReport_For_AllYUVs.csv"
  ```

Test data example:

For **new design** with **x64** encoder,
```
TestSpace= TestData/Codec_NewDesign/x64/
```

case is: slice mode = 1, slice num = 4,
          thread num = 3, target bit rate = 600
YUV is : Zhuling_1280x720.yuv

- memory file generated by encoder, rename and remove to:
  ```
  TestData/Codec_NewDesign/x64/enc_mem_check_point_Zhuling_1280x720.yuv_1_4_3_600.txt
  ```

- Memory analyse result by **run_ParseMemCheckLog.sh** is:
  ```
  TestData/Codec_NewDesign/x64/MemAnalyseResut_Zhuling_1280x720.yuv_1_4_3_600.txt
  ```

- Test report by **run_MememAnalyseForOneYUV.sh** for Zhuling_1280x720.yuv is:
  ```
  TestData/Codec_NewDesign/x64/MemReport_For_Zhuling_1280x720.yuv.csv
  ```

- Ater test all YUV by **run_Main.sh**; report for all YUVs is:
  ```
  TestData/Codec_NewDesign/x64/MemReport_For_AllYUVs.csv
  ```

2. Memory analyse for encode one case

```
run_ParseMemCheckLog.sh
#*******************************************************************************
#  brief:  1. parse memory allocate/free info based on memory statistic log
#             ./enc_mem_check_point.txt
#
#          2. to generate above log file,
#              need to enable below macro in codec/common/memory_align.h
#              #define MEMORY_CHECK 1
#
#          3. the output may contain the summary of memory allocate/free
#             statistic info during encoding process, and detail info of all
#             buffers which have been allocated/freed during/after'
#             encoding process
#
#  usage:   ./run_ParseMemCheckLog.sh $LogFile $OutFile $Option
#           ----LogFile: should be enc_mem_check_point.txt
#                        or other rename log file
#           ----OutFile:  the final report file for memory statistic info
#           ----Option:
#                    1)MemCheck     :   all detail info
#                    2)OverallCheck :   summary info only
#
#
#*******************************************************************************
```

Example:
```
Analyse new design x64 encoder's memory info, with
```
Case   slice mode = 1, slice num = 4,
        thread num = 3, target bit rate = 600

LogFile="TestData/Codec_NewDesign/x64/enc_mem_check_point_Zhuling_1280x720.yuv_1_4_3_600.txt"

OutFile="TestData/Codec_NewDesign/x64/MemAnalyseResut_Zhuling_1280x720.yuv_1_4_3_600.txt"

- **./run_ParseMemCheckLog.sh ${LogFile} ${OutFile} OverallCheck**
- **./run_ParseMemCheckLog.sh ${LogFile} ${OutFile} MemCheck**

if using OverallCheck, will only output below summary info

```
TestData/Codec_NewDesign/x64/MemAnalyseResut_Zhuling_1280x720.yuv_1_4_3_600.txt
MemLeakStatus False: AllocatedNum--FreeNum (116--116) :
AllocateSize==FreeSize==LeakSize (25615532==25615532==0)
```

If using OverallCheck, will output detail info about all buffer
allocate size, free size, allocate num, free num etc

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3. memory analyse for one YUV

```
run_MememAnalyseForOneYUV.sh
#******************************************************************************
#  brief:  Analyse memroy allocate statistic info for one YUV with
#               all test cases
#
#  usage:   ./run_MememAnalyseForOneYUV.sh \$YUVName \$YUVDir \$TestSpace
#             ----YUVName:   Test YUV's name
#             ----YUVDir:    Test YUV's folder, script will search YUV
#                                   within this folder
#             ----TestSpace: Test data output folder
#
#******************************************************************************
```

Test case for one YUV in script(you can modify it if you want):

```
SliceMode=(0  1  2 3)
SliceNum=(1 4  4 0 )
ThreadNum=(1 2 3 4)
SliceSize=(1500 600)
```

Example:
   Test yuv with new design with arch=x64 encoder,

   + Step 1:
      copy encoder h264enc from Codec_NewDesign/x64/

   + Step 2:
      YUVName=" Zhuling_1280x720.yuv"
      YUVDir="../../YUV"
      TestSpace=" TestData/Codec_NewDesign/x64"

   + Step 3:
   ./run_MememAnalyseForOneYUV.sh ${YUVName} ${YUVDir} ${TestSpace}

   Then all test data for Zhuling_1280x720.yuv is under folder
      TestData/Codec_NewDesign/x64/

   Test report file for zhuling is:
      TestData/Codec_NewDesign/x64/MemReport_For_Zhuling_1280x720.yuv.csv

4. Memory analyse for all YUVs

run_Main.sh

```
#*****************************************************************************
#  brief:  Analyse memroy allocate statistic info for all YUVs with
#              all test cases
#
#  usage:    ./run_Main.sh \$TestYUVListDir
#              ----TestYUVListDir: Test YUV's folder, script will search YUV
#                                  in this folder
#
#*****************************************************************************
```

Test all YUVs with all test cases using all encoder in encoder set

You can modify below test sets if you want

```
TestYUVList=("CiscoVT2people_320x192_12fps.yuv"  \
             "xuemei_640x360.yuv" \
             "Zhuling_1280x720.yuv" \
             "desktop_dialog_1920x1080_i420.yuv" \
             "SlideShowFast_SCC_2880x1800.yuv")

TestCodecList=("Codec_NewDesign" \
               "Codec_NewDesign_Step_1-3" \
               "Codec_NewDesign_Step_1-4" \
               "Codec_OriginDesign")

TestCodecArchList=("x64" "x86")
```

And combine with cases in run_MememAnalyseForOneYUV.sh

```
SliceMode=(0  1  2 3)
SliceNum=(1 4  4 0 )
ThreadNum=(1 2 3 4)
SliceSize=(1500 600)
```

Example:

./run_Main.sh ../../YUV

Then all test data will be generated under all below folders:

```
TestData/Codec_OriginDesign/x86
TestData/Codec_OriginDesign/x64
TestData/Codec_NewDesign/x86
TestData/Codec_NewDesign/x64
TestData/Codec_NewDesign_Step_1-3/x86
TestData/Codec_NewDesign_Step_1-3/x64
TestData/Codec_NewDesign_Step_1-4/x86
TestData/Codec_NewDesign_Step_1-4/x64
```

5. Example for final Test Data

All test data for all test encoder all arch wit all test YUVs for all cases:
https://sqbu-github.cisco.com/huashi/OpenH264MemCheckTool/tree/master/TestData

Final Test report for all YUVs:

https://sqbu-
github.cisco.com/huashi/OpenH264MemCheckTool/blob/master/NewDesignTestData.xlsx

example for SlideShowFast_SCC_2880x1800.yuv

SICM	SlcN	PicW	PicH	ThrdN	SlcSz	Origin design AllocSize	FPS	New design AllocSize	FPS	Delta(%) deltaSiz	deltaFPS(%)
3	0	2880	1800	1	1500	99424308	85.17	99171165	88.36	-0.25	3.75
3	0	2880	1800	1	600	99738905	80.77	100121689	86.73	0.38	7.38
3	0	2880	1800	2	1500	162263844	123.39	137297154	122.54	-15.39	-0.69
3	0	2880	1800	2	600	162263844	124.79	199850984	127.57	23.16	2.23
3	0	2880	1800	3	1500	170984608	151.67	149679510	160.58	-12.46	5.87
3	0	2880	1800	3	600	170984608	157.59	244683892	156.55	43.10	-0.66
3	0	2880	1800	4	1500	178796354	165.30	168923895	175.24	-5.52	6.01
3	0	2880	1800	4	600	178796354	166.49	221484277	180.50	23.88	8.41

-15.39% means that new design decrease overall allocate size;
43.10% means that new design increase overall allocate size due to reallocate
modue which is not allowed in origin design

Final test summary:
New design most of time save the overall memory size,
FPS is the same with origin disign