

最简单的基于FFMPEG的Helloworld程序

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[最简单的基于FFMPEG的Helloworld程序](#)

本文记录一个基于FFmpeg的HelloWorld程序。该程序可以打印出FFmpeg类库的基本信息。使用该程序通常可以验证FFmpeg是否正确的安装配置。

源代码

```
[cpp]
1.  /**
2.   * 最简单的FFmpeg Helloworld程序
3.   * Simplest FFmpeg HelloWorld
4.   *
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8.   * Communication University of China / Digital TV Technology
9.   * http://blog.csdn.net/leixiaohua1020
10.  *
11.  *
12.  * 本程序是基于FFmpeg函数的最简单的程序。它可以打印出FFmpeg类库的下列信息：
13.  * Protocol:   FFmpeg类库支持的协议
14.  * AVFormat:   FFmpeg类库支持的封装格式
15.  * AVCodec:    FFmpeg类库支持的编解码器
16.  * AVFilter:   FFmpeg类库支持的滤镜
17.  * Configure: FFmpeg类库的配置信息
18.  *
19.  * This is the simplest program based on FFmpeg API. It can show following
20.  * informations about FFmpeg library:
21.  * Protocol:   Protocols supported by FFmpeg.
22.  * AVFormat:   Container format supported by FFmpeg.
23.  * AVCodec:    Encoder/Decoder supported by FFmpeg.
24.  * AVFilter:   Filters supported by FFmpeg.
25.  * Configure:  configure information of FFmpeg.
26.  *
27.  */
28.
29. #include <stdio.h>
30.
31. #define __STDC_CONSTANT_MACROS
32.
33. #ifdef _WIN32
34. //Windows
35. extern "C"
36. {
37. #include "libavcodec/avcodec.h"
38. #include "libavformat/avformat.h"
39. #include "libavfilter/avfilter.h"
40. };
41. #else
42. //Linux...
43. #ifdef __cplusplus
44. extern "C"
45. {
46. #endif
47. #include <libavcodec/avcodec.h>
48. #include <libavformat/avformat.h>
49. #include <libavfilter/avfilter.h>
50. #ifdef __cplusplus
51. };
```

```

52. #endif
53. #endif
54.
55. //FIX
56. struct URLProtocol;
57. /**
58.  * Protocol Support Information
59.  */
60. char * urlprotocolinfo(){
61.
62.     char *info=(char *)malloc(40000);
63.     memset(info,0,40000);
64.
65.     av_register_all();
66.
67.     struct URLProtocol *pup = NULL;
68.     //Input
69.     struct URLProtocol **p_temp = &pup;
70.     avio_enum_protocols((void **)p_temp, 0);
71.     while ((*p_temp) != NULL){
72.         sprintf(info, "%s[In ][%10s]\n", info, avio_enum_protocols((void **)p_temp, 0));
73.     }
74.     pup = NULL;
75.     //Output
76.     avio_enum_protocols((void **)p_temp, 1);
77.     while ((*p_temp) != NULL){
78.         sprintf(info, "%s[Out][%10s]\n", info, avio_enum_protocols((void **)p_temp, 1));
79.     }
80.
81.     return info;
82. }
83.
84. /**
85.  * AVFormat Support Information
86.  */
87. char * avformatinfo(){
88.
89.     char *info=(char *)malloc(40000);
90.     memset(info,0,40000);
91.
92.     av_register_all();
93.
94.     AVInputFormat *if_temp = av_iformat_next(NULL);
95.     AVOutputFormat *of_temp = av_oformat_next(NULL);
96.     //Input
97.     while(if_temp!=NULL){
98.         sprintf(info, "%s[In ] %10s\n", info, if_temp->name);
99.         if_temp=if_temp->next;
100.    }
101.    //Output
102.    while (of_temp != NULL){
103.        sprintf(info, "%s[Out] %10s\n", info, of_temp->name);
104.        of_temp = of_temp->next;
105.    }
106.    return info;
107. }
108.
109. /**
110.  * AVCodec Support Information
111.  */
112. char * avcodecinfo()
113. {
114.     char *info=(char *)malloc(40000);
115.     memset(info,0,40000);
116.
117.     av_register_all();
118.
119.     AVCodec *c_temp = av_codec_next(NULL);
120.
121.     while(c_temp!=NULL){
122.         if (c_temp->decode!=NULL){
123.             sprintf(info, "%s[Dec]", info);
124.         }
125.         else{
126.             sprintf(info, "%s[Enc]", info);
127.         }
128.         switch (c_temp->type){
129.             case AVMEDIA_TYPE_VIDEO:
130.                 sprintf(info, "%s[Video]", info);
131.                 break;
132.             case AVMEDIA_TYPE_AUDIO:
133.                 sprintf(info, "%s[Audio]", info);
134.                 break;
135.             default:
136.                 sprintf(info, "%s[Other]", info);
137.                 break;
138.         }
139.
140.         sprintf(info, "%s %10s\n", info, c_temp->name);
141.
142.         c_temp=c_temp->next;

```

```

143.     }
144.     return info;
145. }
146.
147. /**
148.  * AVFilter Support Information
149.  */
150. char * avfilterinfo()
151. {
152.     char *info=(char *)malloc(40000);
153.     memset(info,0,40000);
154.
155.     avfilter_register_all();
156.
157.     AVFilter *f_temp = (AVFilter *)avfilter_next(NULL);
158.
159.     while (f_temp != NULL){
160.         sprintf(info, "%s[%15s]\n", info, f_temp->name);
161.         f_temp=f_temp->next;
162.     }
163.     return info;
164. }
165.
166. /**
167.  * Configuration Information
168.  */
169. char * configurationinfo()
170. {
171.     char *info=(char *)malloc(40000);
172.     memset(info,0,40000);
173.
174.     av_register_all();
175.
176.     sprintf(info, "%s\n", avcodec_configuration());
177.
178.     return info;
179. }
180.
181. int main(int argc, char* argv[])
182. {
183.     char *infostr=NULL;
184.     infostr=configurationinfo();
185.     printf("\n<<Configuration>>\n%s",infostr);
186.     free(infostr);
187.
188.     infostr=urlprotocolinfo();
189.     printf("\n<<URLProtocol>>\n%s",infostr);
190.     free(infostr);
191.
192.     infostr=avformatinfo();
193.     printf("\n<<AVFormat>>\n%s",infostr);
194.     free(infostr);
195.
196.     infostr=avcodecinfo();
197.     printf("\n<<AVCodec>>\n%s",infostr);
198.     free(infostr);
199.
200.     infostr=avfilterinfo();
201.     printf("\n<<AVFilter>>\n%s",infostr);
202.     free(infostr);
203.
204.     return 0;
205. }

```

运行结果

Configure信息格式如下所示。

```

[plain]
1.  --disable-static --enable-shared --enable-gpl --enable-version3 --disable-w32threads --enable-avisynth --enable-bzlib --enable-fontc
onfig --enable-frei0r --enable-gnutls --enable-iconv --enable-libass --enable-libbluray --enable-libcaca --enable-libfreetype --
enable-libgsm --enable-libilbc --enable-libmodplug --enable-libmp3lame --enable-libopencore-amrnb --enable-libopencore-amrwb --enab
le-libopenjpeg --enable-libopus --enable-librtmp --enable-libschrödinger --enable-libsoxr --enable-libspeex --enable-libtheora --en
able-libtwolame --enable-libvidstab --enable-libvo-aacenc --enable-libvo-amrwbenc --enable-libvorbis --enable-libvpx --enable-libwav
pack --enable-libx264 --enable-libx265 --enable-libxavs --enable-libxvid --enable-decklink --enable-zlib

```

Protocol信息格式如下所示。

	[plain]		
1.	[In]	cache	
2.	[In]	concat	
3.	[In]	crypto	
4.	[In]	data	
5.	[In]	file	
6.	[In]	ftp	
7.	[In]	gopher	
8.	[In]	hls	
9.	[In]	http	
10.	[In]	httpproxy	
11.	[In]	https	
12.	[In]	mms	
13.	[In]	mmst	
14.	[In]	pipe	
15.	[In]	rtp	
16.	[In]	srtsp	
17.	[In]	subfile	
18.	[In]	tcp	
19.	[In]	tls	
20.	[In]	udp	
21.	[In]	rtmp	
22.	[In]	rtmpe	
23.	[In]	rtmps	
24.	[In]	rtmpt	
25.	[In]	rtmpte	
26.	[In]	(null)	
27.	[Out]	ftp	
28.	[Out]	gopher	
29.	[Out]	http	
30.	[Out]	httpproxy	
31.	[Out]	https	
32.	[Out]	md5	
33.	[Out]	pipe	
34.	[Out]	rtp	
35.	[Out]	srtsp	
36.	[Out]	tcp	
37.	[Out]	tls	
38.	[Out]	udp	
39.	[Out]	rtmp	
40.	[Out]	rtmpe	
41.	[Out]	rtmps	
42.	[Out]	rtmpt	
43.	[Out]	rtmpte	
44.	[Out]	(null)	

AVFormat信息格式如下所示。

	[plain]		
1.	[In]	aac	
2.	[In]	ac3	
3.	[In]	act	
4.	[In]	adf	
5.	[In]	adp	
6.	[In]	adx	
7.	[In]	aea	
8.	[In]	afc	
9.	[In]	aiff	
10.	[In]	amr	
11.	[In]	anm	
12.	[In]	apc	
13.	[In]	ape	
14.	[In]	aqtitle	
15.	[In]	asf	
16.	[In]	ass	
17.	[In]	ast	
18.	[In]	au	
19.	[In]	avi	
20.	[In]	avisynth	
21.	[In]	avr	
22.	[In]	avs	
23.	[In]	bethsoftvid	
24.	[In]	bfi	
25.	[In]	bin	
26.	[In]	bink	
27.	[In]	bit	
28.	[In]	bm	
29.	[In]	brstm	
30.	[In]	boa	
31.	[In]	c93	
32.	[In]	caf	
33.	[In]	cavsvideo	
34.	[In]	cdg	
35.	[In]	cdxl	
36.	[In]	cine	
37.	[In]	concat	
38.	[In]	data	



39.	[In]	daud
40.	[In]	dfa
41.	[In]	dirac
42.	[In]	dnxhd
43.	[In]	dsf
44.	[In]	dsicin
45.	[In]	dtc
46.	[In]	dtshd
47.	[In]	dv
48.	[In]	dx
49.	[In]	ea
50.	[In]	ea_cdata
51.	[In]	eac3
52.	[In]	epaf
53.	[In]	ffm
54.	[In]	ffmetadata
55.	[In]	filmstrip
56.	[In]	flac
57.	[In]	flic
58.	[In]	flv
59.	[In]	4xm
60.	[In]	frm
61.	[In]	g722
62.	[In]	g723_1
63.	[In]	g729
64.	[In]	gif
65.	[In]	gsm
66.	[In]	gxf
67.	[In]	h261
68.	[In]	h263
69.	[In]	h264
70.	[In]	hevc
71.	[In]	hls,applehttp
72.	[In]	hnm
73.	[In]	ico
74.	[In]	idcin
75.	[In]	idf
76.	[In]	iff
77.	[In]	ilbc
78.	[In]	image2
79.	[In]	image2pipe
80.	[In]	alias_pix
81.	[In]	brender_pix
82.	[In]	ingenient
83.	[In]	ipmovie
84.	[In]	ircam
85.	[In]	iss
86.	[In]	iv8
87.	[In]	ivf
88.	[In]	jacosub
89.	[In]	ju
90.	[In]	latm
91.	[In]	lmlm4
92.	[In]	loas
93.	[In]	lvf
94.	[In]	lxf
95.	[In]	m4v
96.	[In]	matroska,webm
97.	[In]	mgsts
98.	[In]	microdvd
99.	[In]	mjpeg
100.	[In]	mlp
101.	[In]	mlv
102.	[In]	mm
103.	[In]	mmf
104.	[In]	mov,mp4,m4a,3gp,3g2,mj2
105.	[In]	mp3
106.	[In]	mpc
107.	[In]	mpc8
108.	[In]	mpeg
109.	[In]	mpegts
110.	[In]	mpegtsraw
111.	[In]	mpegvideo
112.	[In]	mpl2
113.	[In]	mpsub
114.	[In]	msnwctcp
115.	[In]	mtv
116.	[In]	mv
117.	[In]	mvi
118.	[In]	mx
119.	[In]	mxg
120.	[In]	nc
121.	[In]	nistsphere
122.	[In]	nsv
123.	[In]	nut
124.	[In]	nuv
125.	[In]	ogg
126.	[In]	oma
127.	[In]	paf
128.	[In]	alaw
129.	[In]	mulaw

130.	[In]	f64be
131.	[In]	f64le
132.	[In]	f32be
133.	[In]	f32le
134.	[In]	s32be
135.	[In]	s32le
136.	[In]	s24be
137.	[In]	s24le
138.	[In]	s16be
139.	[In]	s16le
140.	[In]	s8
141.	[In]	u32be
142.	[In]	u32le
143.	[In]	u24be
144.	[In]	u24le
145.	[In]	u16be
146.	[In]	u16le
147.	[In]	u8
148.	[In]	pjs
149.	[In]	pmp
150.	[In]	pva
151.	[In]	pvf
152.	[In]	qcp
153.	[In]	r3d
154.	[In]	rawvideo
155.	[In]	realtext
156.	[In]	redspark
157.	[In]	rl2
158.	[In]	rm
159.	[In]	roq
160.	[In]	rpl
161.	[In]	rsd
162.	[In]	rso
163.	[In]	rtp
164.	[In]	rtsp
165.	[In]	sami
166.	[In]	sap
167.	[In]	sbg
168.	[In]	sdp
169.	[In]	sdr2
170.	[In]	film_cpk
171.	[In]	shn
172.	[In]	siff
173.	[In]	smk
174.	[In]	smjpeg
175.	[In]	smush
176.	[In]	sol
177.	[In]	sox
178.	[In]	spdif
179.	[In]	srt
180.	[In]	psxstr
181.	[In]	subviewer1
182.	[In]	subviewer
183.	[In]	swf
184.	[In]	tak
185.	[In]	tedcaptions
186.	[In]	thp
187.	[In]	tiertexseq
188.	[In]	tmv
189.	[In]	truehd
190.	[In]	tta
191.	[In]	txd
192.	[In]	tty
193.	[In]	vc1
194.	[In]	vc1test
195.	[In]	vivo
196.	[In]	vmd
197.	[In]	vobsub
198.	[In]	voc
199.	[In]	vplayer
200.	[In]	vqf
201.	[In]	w64
202.	[In]	wav
203.	[In]	wc3movie
204.	[In]	webvtt
205.	[In]	wsaud
206.	[In]	wsvqa
207.	[In]	wtv
208.	[In]	wv
209.	[In]	xa
210.	[In]	xbin
211.	[In]	xmv
212.	[In]	xwma
213.	[In]	yop
214.	[In]	yuv4mpegpipe
215.	[In]	libmodplug
216.	[Out]	a64
217.	[Out]	ac3
218.	[Out]	adts
219.	[Out]	adx
220.	[Out]	aiff

221. [Out] amr
222. [Out] asf
223. [Out] ass
224. [Out] ast
225. [Out] asf_stream
226. [Out] au
227. [Out] avi
228. [Out] avm2
229. [Out] bit
230. [Out] caf
231. [Out] cavsvideo
232. [Out] crc
233. [Out] data
234. [Out] daud
235. [Out] dirac
236. [Out] dnxhd
237. [Out] dts
238. [Out] dv
239. [Out] eac3
240. [Out] f4v
241. [Out] ffm
242. [Out] ffmetadata
243. [Out] filmstrip
244. [Out] flac
245. [Out] flv
246. [Out] framecrc
247. [Out] framemd5
248. [Out] g722
249. [Out] g723_1
250. [Out] gif
251. [Out] gxf
252. [Out] h261
253. [Out] h263
254. [Out] h264
255. [Out] hds
256. [Out] hevc
257. [Out] hls
258. [Out] ico
259. [Out] ilbc
260. [Out] image2
261. [Out] image2pipe
262. [Out] ipod
263. [Out] ircam
264. [Out] ismv
265. [Out] ivf
266. [Out] jacosub
267. [Out] latm
268. [Out] m4v
269. [Out] md5
270. [Out] matroska
271. [Out] matroska
272. [Out] microdvd
273. [Out] mjpeg
274. [Out] mlp
275. [Out] mmf
276. [Out] mov
277. [Out] mp2
278. [Out] mp3
279. [Out] mp4
280. [Out] mpeg
281. [Out] vcd
282. [Out] mpeg1video
283. [Out] dvd
284. [Out] svc
285. [Out] mpeg2video
286. [Out] vob
287. [Out] mpegts
288. [Out] mpjpeg
289. [Out] mxf
290. [Out] mxf_d10
291. [Out] null
292. [Out] nut
293. [Out] oga
294. [Out] ogg
295. [Out] oma
296. [Out] opus
297. [Out] alaw
298. [Out] mulaw
299. [Out] f64be
300. [Out] f64le
301. [Out] f32be
302. [Out] f32le
303. [Out] s32be
304. [Out] s32le
305. [Out] s24be
306. [Out] s24le
307. [Out] s16be
308. [Out] s16le
309. [Out] s8
310. [Out] u32be
311. [Out] u32le
312. [Out] u24be

312.	[Out]	u24ve
313.	[Out]	u24le
314.	[Out]	u16be
315.	[Out]	u16le
316.	[Out]	u8
317.	[Out]	psp
318.	[Out]	rawvideo
319.	[Out]	rm
320.	[Out]	roq
321.	[Out]	rso
322.	[Out]	rtp
323.	[Out]	rtsp
324.	[Out]	sap
325.	[Out]	segment
326.	[Out]	stream_segment,ssegment
327.	[Out]	smjpeg
328.	[Out]	smoothstreaming
329.	[Out]	sox
330.	[Out]	spdif
331.	[Out]	speex
332.	[Out]	srt
333.	[Out]	swf
334.	[Out]	tee
335.	[Out]	3g2
336.	[Out]	3gp
337.	[Out]	mkvtimestamp_v2
338.	[Out]	truehd
339.	[Out]	uncodedframecrc
340.	[Out]	vc1
341.	[Out]	vc1test
342.	[Out]	voc
343.	[Out]	w64
344.	[Out]	wav
345.	[Out]	webm
346.	[Out]	webvtt
347.	[Out]	wtv
348.	[Out]	wv
349.	[Out]	yuv4mpegpipe

AVCodec信息格式如下所示。

	[plain]  
1.	[Enc][Video] a64multi
2.	[Enc][Video] a64multi5
3.	[Dec][Video] aasc
4.	[Dec][Video] aic
5.	[Enc][Video] alias_pix
6.	[Dec][Video] alias_pix
7.	[Enc][Video] amv
8.	[Dec][Video] amv
9.	[Dec][Video] anm
10.	[Dec][Video] ansi
11.	[Enc][Video] asv1
12.	[Dec][Video] asv1
13.	[Enc][Video] asv2
14.	[Dec][Video] asv2
15.	[Dec][Video] aura
16.	[Dec][Video] aura2
17.	[Enc][Video] avrp
18.	[Dec][Video] avrp
19.	[Dec][Video] avrn
20.	[Dec][Video] avs
21.	[Enc][Video] avui
22.	[Dec][Video] avui
23.	[Enc][Video] ayuv
24.	[Dec][Video] ayuv
25.	[Dec][Video] bethsoftvid
26.	[Dec][Video] bfi
27.	[Dec][Video] binkvideo
28.	[Enc][Video] bmp
29.	[Dec][Video] bmp
30.	[Dec][Video] bmv_video
31.	[Dec][Video] brender_pix
32.	[Dec][Video] c93
33.	[Dec][Video] cavs
34.	[Dec][Video] cdgraphics
35.	[Dec][Video] cdxl
36.	[Enc][Video] cinepak
37.	[Dec][Video] cinepak
38.	[Enc][Video] cljr
39.	[Dec][Video] cljr
40.	[Dec][Video] cllc
41.	[Enc][Audio] comfortnoise
42.	[Dec][Audio] comfortnoise
43.	[Dec][Video] cpia
44.	[Dec][Video] camstudio
45.	[Dec][Video] cyuv
46.	[Dec][Video] dfa

46.	[Dec][Video]	ora
47.	[Dec][Video]	dirac
48.	[Enc][Video]	dnxhd
49.	[Dec][Video]	dnxhd
50.	[Enc][Video]	dpx
51.	[Dec][Video]	dpx
52.	[Dec][Video]	dsicinvideo
53.	[Enc][Video]	dvvideo
54.	[Dec][Video]	dvvideo
55.	[Dec][Video]	dxa
56.	[Dec][Video]	dxtory
57.	[Dec][Video]	eacmv
58.	[Dec][Video]	eamad
59.	[Dec][Video]	eatgq
60.	[Dec][Video]	eatgv
61.	[Dec][Video]	eatqi
62.	[Dec][Video]	8bps
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Simplest FFmpeg Player

项目主页

SourceForge：<https://sourceforge.net/projects/simplestffmpegplayer/>

Github：https://github.com/leixiaohua1020/simplest_ffmpeg_player

开源中国：http://git.oschina.net/leixiaohua1020/simplest_ffmpeg_player

CSDN下载地址：<http://download.csdn.net/detail/leixiaohua1020/8924321>

本程序实现了视频文件的解码和显示（支持HEVC，H.264，MPEG2等）。

是最简单的FFmpeg视频解码方面的教程。

通过学习本例子可以了解FFmpeg的解码流程。

项目包含6个工程：

simplest_ffmpeg_player：标准版，FFmpeg学习的开始。

simplest_ffmpeg_player_su：SU（SDL Update）版，加入了简单的SDL的Event。

simplest_ffmpeg_decoder：一个包含了封装格式处理功能的解码器。使用了libavcodec和libavformat。

simplest_ffmpeg_decoder_pure：一个纯净的解码器。只使用libavcodec（没有使用libavformat）。

simplest_video_play_sdl2：使用SDL2播放YUV的例子。

simplest_ffmpeg_helloworld：输出FFmpeg类库的信息。

文章标签：[FFmpeg](#) [libavcodec](#) [libavformat](#) [libavfilter](#) [urlprotocol](#)

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