# nPlayer

TI-Nspire Video Player
Version 1.0


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## Introduction

nPlayer combines a series of computer programs and an on-calculator interpreter in order to allow one to watch videos on their TI-Nspire calculator. Using this program, one could download any video from YouTube, use the simple computer conversion process, and view it on their calculator.

## Requirements

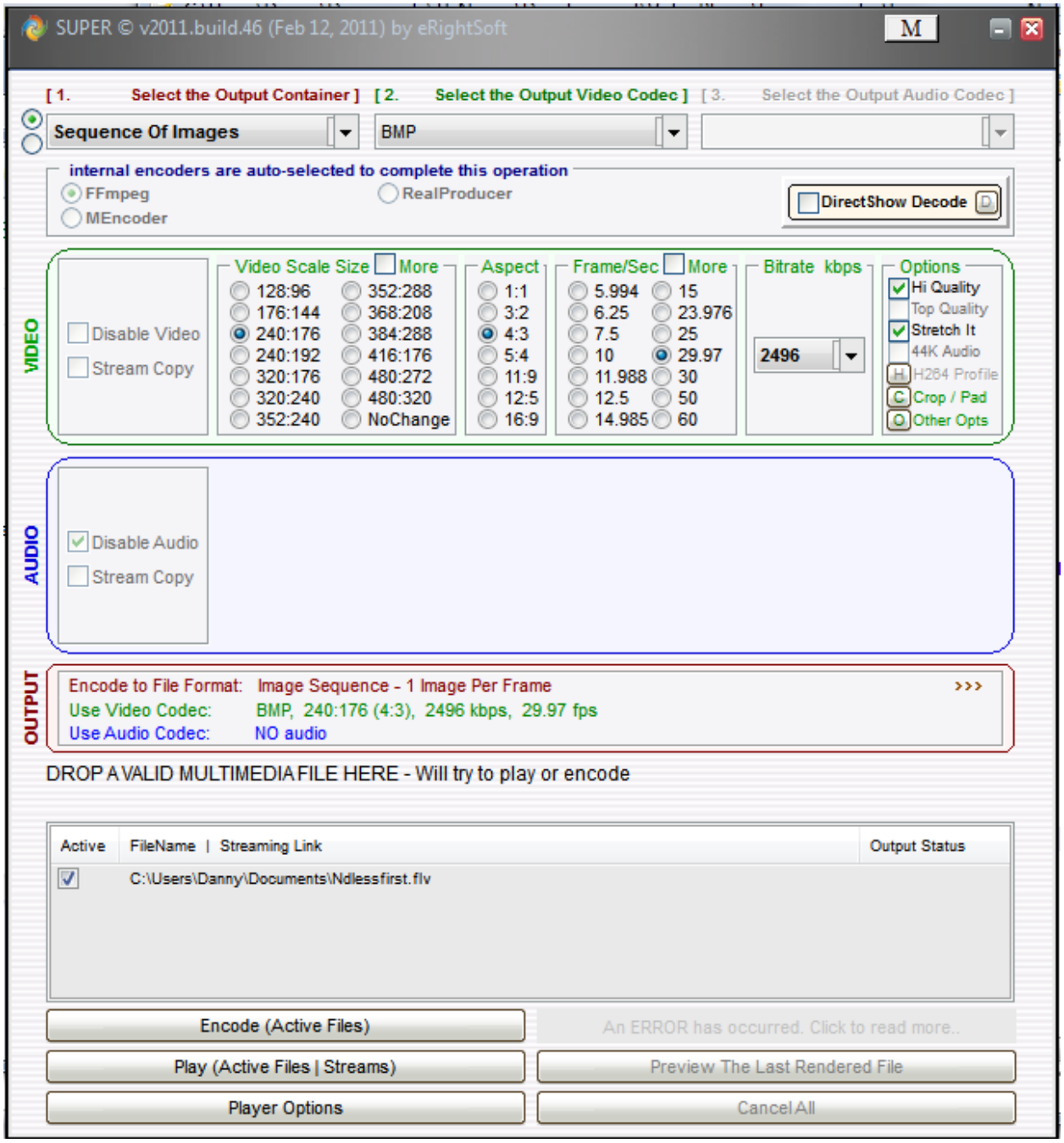
Because this project is coded in C, the utility Ndless is required in order for this project to work on the TI-Nspire. Ndless allows one to bypass Texas Instrument's restrictions of C and ASM programming on the TI-Nspire and allows one to run this third-party software on their calculator. If you do not have Ndless installed on your calculator, a link to the ticalc.org download page for Ndless is at the end of this document.

## How to use nPlayer

As stated earlier, nPlayer combines a series of computer utilities in order to prep the original video file to be played on one's calculator. Only one program that is not included in the nPlayer download is needed for this process: SUPER © (Simplified Universal Player Encoder and Renderer). SUPER is needed in order to convert any video into a stream of .bmp images that will later be compressed. You can download SUPER here.

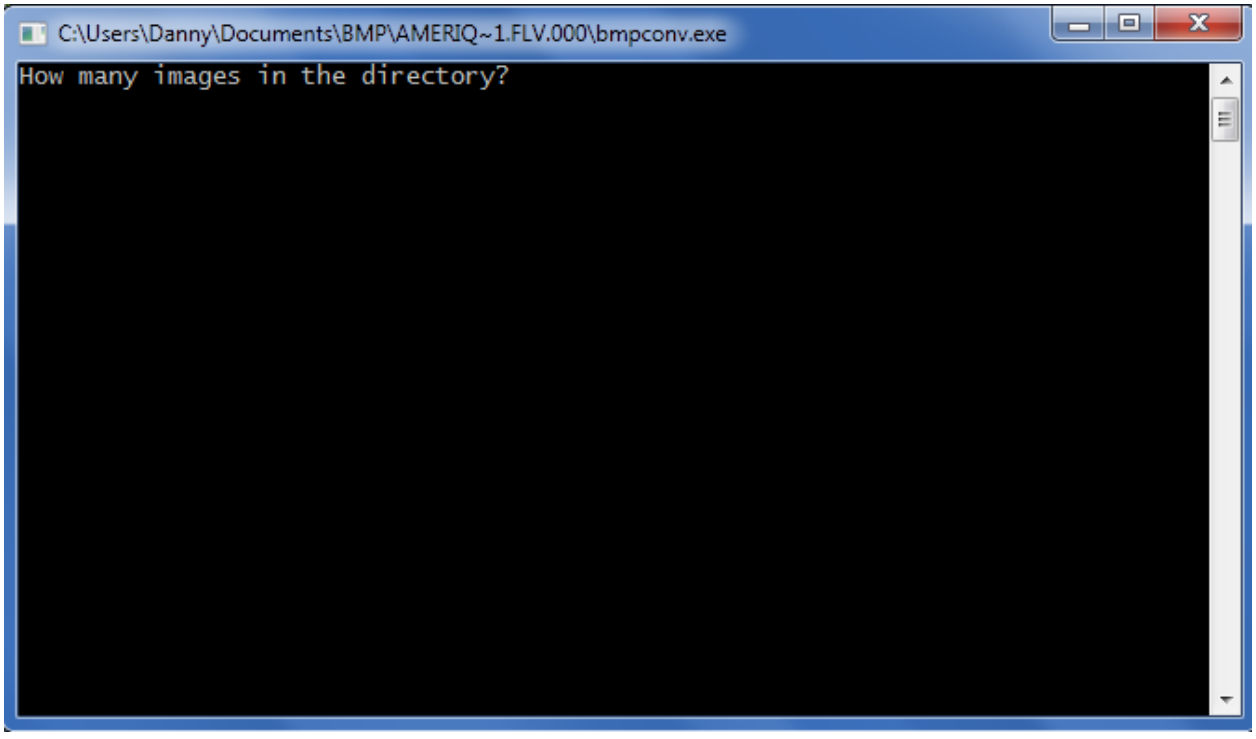
When you open SUPER, drag your video file onto SUPER where it says "DROP A VALID MULTIMEDIA FILE HERE." From the menu on the top left, select "Sequence Of Images" and from the menu on the top in the middle select "BMP." In the "Video Scale Size" menu, select any option less than "320:240." Choosing a smaller size will greatly reduce the size of the file, but will make the video appear smaller on the Nspire's screen. ***The size "240:176" is recommended.*** When you are finished making these selections, click "Encode (Active Files)" at the bottom of the

SUPER window. An image of what SUPER should look like with the correct options selected appears below.



## Converting the Images

Assuming SUPER ran correctly, it should have created a folder “BMP” in the directory where the video is located. Navigate to the “BMP” directory, and then to the appropriate sub-folder for your video. From the original “nPlayer.zip” file, copy the file “VideoConverter.exe” into this directory and run the program. Upon starting the program, you will see the following:




The program is prompting you for the number of images created by SUPER. Enter the maximum

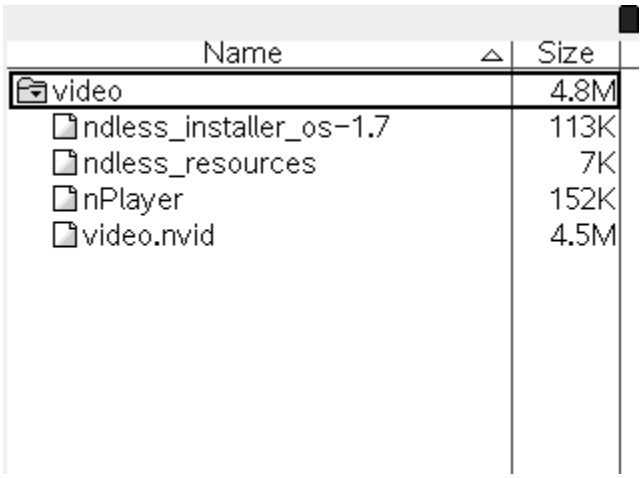
number of the images that are created. For example, if your directory looked like this:


you would enter the number 927, as that is the maximum image number. If the number you enter is too high, the program will work, but the produced file may be corrupt. Although there is no set limit for the number of frames, it is recommended to limit 320:240 videos to 1,500 and 240:176 videos to 4,000.

After running this program, a file “video.nvid.tns” should have been created! This is the raw video data for the TI-Nspire. You are almost ready to view the video on your calculator!

## Playing on the calculator

You must now transfer the needed files to your calculator. Create a new directory “video” on your calculator and send the files “video.nvid.tns” and the file “nPlayer.tns” (from the original nPlayer download) to this directory. It should look something like this:




In order to view the video, ensure that Ndless is installed and run the document “nPlayer.tns.” The video should begin to play! The video player will work on TI-Nspire OS 1.7-2.1, but you must use “Ndless 2.0” for this to successfully work!

## Links

YouTube Video Downloader - Download

Ndless Download - Download

SUPER Download - Download

## Warranty

Although I have tested this program extensively and I am confident that it will not cause any damage, I am *NOT* responsible for any damage that this program causes to you or your calculator. Likewise, I am most certainly not responsible for the content of the videos viewed with this player. By using this program, it is assumed that you have read and agree to these conditions.

## Contact

If you have any questions/issues about this program, feel free to contact me any time at apcalc@games.com.

## Acknowledgements

Brian Coventry – Author of FourVid (TI-84+ Video Player), inspiration for project, general video conversion method.

All beta testers and contributors to the Ndless project!

## Documentation of the ".nvid" file format

| Field | Size | Description |
|---|---|---|
| 1 | int | "Magic Number" – Value is always (in decimal) 764 or (in hexadecimal) 0xFC |
| 2 | int | An integer representing the number of frames in the video. The program must loop this many times to show each from of the video. |
| 3 | int | An integer representing the width of each frame of the video. |
| 4 | int | An integer representing the height of each frame of the video. |
| 5 | unsigned short | Represents the number of bytes in each *compressed* image. Each image is compressed with Run Length Encoding. |
| 6 | char | Represents "char" values. This field will repeat a total number of times equal to the vale in field 3 preceding it. |
| **NOTE: Fields 3 and 4 will repeat a total number of times equal to the value of field 2 and field 3, respectively. For example, if the video file was 100 frames, each with 100 bites of compressed data to a frame, field 3 would appear 100 times, with 100 bytes of raw compressed data (field 4) between each of those values.** | | |