UltiMOD Player for Windows
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Registering UltiMOD

n   CompuServe Registration

   Dial into your CompuServe Account.
   At any prompt type "GO SWREG"
   Select Registration ID# "1823".
   Registration fee of $20 U.S.will be billed to your CompuServe Account.

n   Mail Registration

   Send the following information and Check/Money Order in the amount of $20 U.S. to:

   Thomas W. Olsen
   163 Granville Road
   Southwick, Massachusetts 01077
   U.S.A.

   Name:
   Address:
   City:
   State:
   Zip:
   Country:
   Diskette Format (3.5", 5.25"):
   Where Did You Get UltiMOD?

Introduction

Digital audio has beaten a serious path to the PC desktop thanks to the Multimedia capabilities of Microsoft Windows, and its usefulness extends far beyond mere voice-annotated spreadsheets into the realm of CD-quality recording and playback. Although Multimedia is a relatively new phenomenon to the PC, numerous other hardware platforms, including the Commodore Amiga and Apple Macintosh to name a few, have supported similar technology for several years now;

consequently, Windows Multimedia developers should look to the pitfalls and successes of other platforms for valuable cues.

One of the primary limitations of digital audio is storage space: digital recordings require a LOT of room. For example, a two minute 8-bit mono recording sampled at 44.10 kHz occupies a 5.28MB WAV file. Double that figure for a 16-bit recording. "But why," you ask, "worry about storage space when a single, inexpensive CD-ROM can accomodate over six hundred megabytes?" The answer is simple: it takes lots of time and effort for the CPU to read and process so much data, and that translates into reduced overall system performance.

The Musical Instrument Digital Interface (MIDI) protocol overcomes space limitations by storing just the sequence of notes for a particular song; however, on the downside, MIDI does not guarantee that songs created on one synthesizer will sound exactly the same on another, nor can it reproduce a human voice. It may surprise you to learn that the Commodore Amiga supports 8-bit digital recordings of five minutes or more that fit on a single floppy disk. This remarkable feat is accomplished using the so-called Module (MOD) file format.

Anatomy of the MOD Format

MOD files fall somewhere between MIDI and WAV formats. MODs, however, contain up to 31 digitized samples--called instruments--in a format similar to WAV Pulse Code Modulation (PCM). Each digital sample represents one note of a particular instrument in one pitch; that is, the digitized "plink" of a piano or the "bang" of a drum. Human voice is also considered an instrument, too. This digitized waveform is a sort of instrument "signature." Modifying the pitch, tempo, and attack of the digitized sample enables you to reproduce any note for a given instrument. MIDI has 16 channels--MODs four; hence, four instruments can be played simultaneously. MOD files contain a table that describes when to play an instrument and upon which channel. All kinds of special effects can be applied to individual notes: arpeggios, portamentos, pitch and volume slides, vibratos, etc.

```
typedef struct tagMODHEADER
{
    char      name[20];
} MODHEADER;


typedef struct tagINSTRUMENT
{
    char         name[22];
    WORD      sampleLength;
    WORD      volume;
    WORD      repeatOffset;
```

```c
    WORD      repeatLength;
} INSTRUMENT;


typedef struct tagPOSITIONTABLE
{
    BYTE      noOfPositions;
    BYTE      reserved;
    BYTE      position[ MAX_POSITIONS ];
} POSITIONTABLE;

typedef struct tagNOTE
{
    WORD      word1;
    WORD      word2;
} NOTE;


typedef struct tagCHANNEL
{
    NOTE      note;
} CHANNEL;

typedef struct tagPATTERNROW
{
    CHANNEL channel[MAX_CHANNELS];
} PATTERNROW;

typedef struct tagPATTERNTABLE
{
    PATTERNROW row[MAX_PATTERN_ROWS];
} PATTERNTABLE;

// This is the order of these elements in the .MOD file.

MODHEADER        modHeader;
INSTRUMENT       instrument[NO_OF_INSTRUMENTS];
POSITIONTABLE    positionTable;
PATTERNTABLE     patternTable;
```
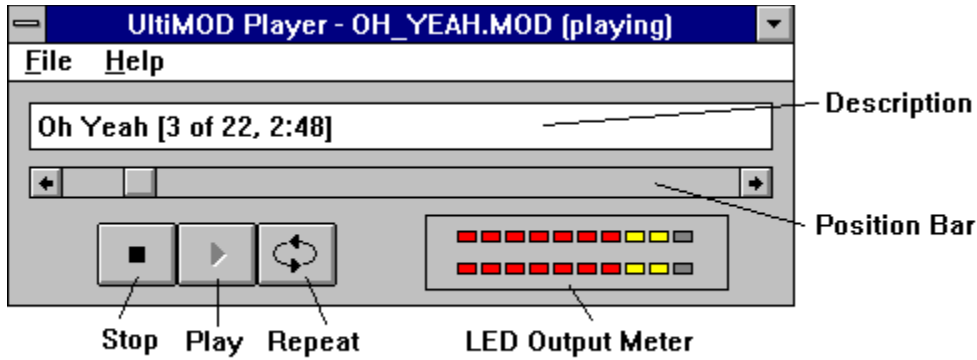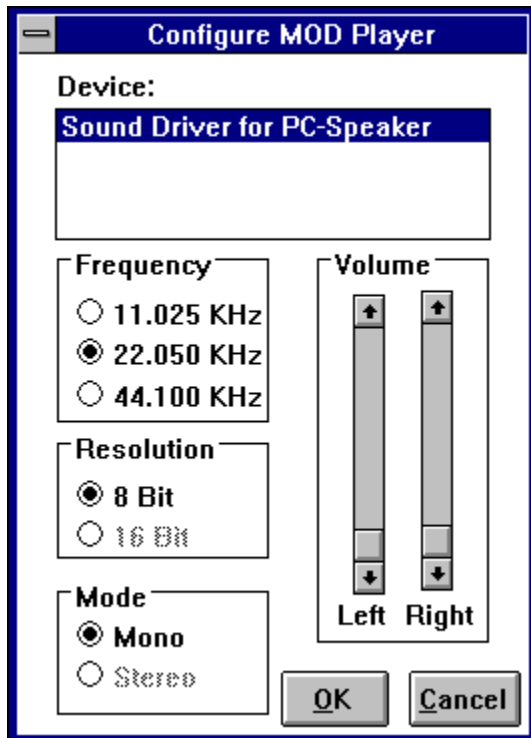
NOTE: NO_OF_INSTRUMENTS defaults to 15, unless the .MOD file contains 'M.K.', 'FLT4', or 'FLT8' at Offset 1080 (decimal)--in which case there are 31 instruments.

Tthe UltiMOD Player

UltiMOD Player - OH_YEAH.MOD (playing)

Oh Yeah [3 of 22, 2:48] — Description

Position Bar

Stop Play Repeat   LED Output Meter

Configuring UltiMOD

UltiMOD should work with all Windows MPC-compatible sound cards,
including ADLIB, SoundBlaster, and others supporting 44.1kHz 16-bit
stereo audio output. By selecting the &File&Configure option from the
UltiMOD Player menu, the following dialog box will appear. You can then
modify device, volume, frequency, resolution, and mode settings:

Configure MOD Player

Device:
Sound Driver for PC-Speaker

Frequency
○ 11.025 KHz
◉ 22.050 KHz
○ 44.100 KHz

Resolution
◉ 8 Bit
○ 16 Bit

Mode
◉ Mono
○ Stereo

Volume

Left Right

OK   Cancel

Where Can I Obtain MOD Files, Anyway?
MOD files are surprisingly popular with users of both Amiga and IBM-compatible machines. One of
the best places to find MOD files

is in the Compuserve AMIGAARTS Forum (GO AMIGAARTS). They can also be found in dozens of other CIS Forums. Just type GO IBMFF or GO AMIGAFF and search for 'MOD'.