Family API

Family API (FAPI) is a subset of Control Program API which can be used to write binary portable applications. Such applications can be run as on OS/2 as on DOS system without any modifications.

Dual OS applications

It is possible to write programs which will run on OS/2, DOS and Windows NT from one binary. Moreover, same source code can be used without any #ifdef and other preprocessor statements. Such portability achieved via Family API. Family API is OS/2 API emulation layer on top of DOS. OS/2 executable file is in NE (New Executable) file format. NE file consist of two parts:

1. Legacy DOS MZ EXE format part;
2. NE EXE part.

Using Family API MZ part of file used to provide loading and dynamic linking mechanism to load and link NE. Also Family API file contains emulation library which translates OS/2 API calls to DOS interrupt calls. So, same file can be executed as in OS/2 as in DOS. Windows NT contains OS2 Subsystem (os2ss.exe) which provides OS/2 API layer on top of Windows NT kernel. So, Family API allows to support 3 OSes using one binary file.

For current time only 16-bit Family API supported.

Writing portable tools

As example of dual mode program lets clone EXEHDR tools from OS/2 and Windows SDK/Toolkit. First of all consider we writing program for OS/2. Other things will be done later to make dual mode program.

```
#include <os2.h>
#include <newexe.h>

exe_hdr mz_hdr;
new_exe ne_hdr;

void main(void)
{
  DosOpen(FileHandle);
  DosRead(FileHandle, mz_hdr);
  DumpMZ(mz_hdr);
  if (is_extended_exe(mz_hdr))
```

```
  {
    DosRead(FileHandle, buffer);
    if (is_NE(buffer)) DumpNE((new_exe)buffer);
  }
  DosClose(FileHandle);
}
```

Function Calls

OS/2 1.0 introduced 93(?) function calls that could be used in FAPI programs.

Name	Description	Module (OS/2)	Library (DOS)	Status (OS/2)	Status (DOS)
BadDynLink		–	API/FAPI	–	
DosBeep	Generates sound from the speaker	DOSCALLS	API/FAPI		Done
DosBufReset	Flushes a file cache buffers	DOSCALLS	API/FAPI	Done	Done
DosChDir	Defines the current directory for the requesting process	DOSCALLS	API/FAPI	Done	Done
DosChgFilePtr	Moves the read/write pointer	DOSCALLS	API/FAPI	Done	Done
DosClose	Closes a handle to a file, pipe, or device	DOSCALLS	API/FAPI	Done	Done
DosCreateCSAlias	Create CS alias from data segment	DOSCALLS	API/FAPI		Done
DosDelete	Removes a directory entry associated with a file name	DOSCALLS	API/FAPI	Done	Done
DosDevConfig	Return device configuration	DOSCALLS	API/FAPI		Done
DosDupHandle	Returns a new file handle for an open file	DOSCALLS	API/FAPI	Done	Done
DosFreeSeg	Deallocates a memory segment	DOSCALLS	API/FAPI		Done
DosGetDateTime	Get the current date and time	DOSCALLS	API/FAPI		Done
DosGetEnv	Returns the address of the process environment string for the current process	DOSCALLS	API/FAPI		Done
DosGetHugeShift	Returns a shift count used to derive the selectors that address memory allocated with DosAllocHuge	DOSCALLS	API/FAPI		Done
DosGetMachineMode	Returns the current mode of the processor	DOSCALLS	API/FAPI	Done	Done

Name	Description	Module (OS/2)	Library (DOS)	Status (OS/2)	Status (DOS)
DosGetMessage		DOSCALLS	API/FAPI		
DosGetVersion	Returns the OS version number	DOSCALLS	API/FAPI	Done	Done
DosInsMessage		DOSCALLS	API/FAPI		
DosMkDir	Creates a subdirectory	DOSCALLS	API/FAPI	Done	Done
DosMove	Moves a file object to another location and changes its name	DOSCALLS	API/FAPI		Done
DosNewSize		DOSCALLS	API/FAPI		
DosPutMessage		DOSCALLS	API/FAPI		
DosQCurDir		DOSCALLS	API/FAPI		
DosQCurDisk		DOSCALLS	API/FAPI		
DosQFileMode		DOSCALLS	API/FAPI		
DosQFSInfo		DOSCALLS	API/FAPI		
DosQVerify	Returns the value of the verify flag	DOSCALLS	API/FAPI	Done	Done
DosRmDir	Removes a subdirectory from the specified disk	DOSCALLS	API/FAPI	Done	Done
DosSelectDisk	Selects the drive specified as the default drive	DOSCALLS	API/FAPI	Done	Done
DosSetDateTime		DOSCALLS	API/FAPI		
DosSetFileInfo		DOSCALLS	API/FAPI		
DosSetFileMode		DOSCALLS	API/FAPI		
DosSetVerify	Sets write verification	DOSCALLS	API/FAPI	Done	Done
DosSleep		DOSCALLS	API/FAPI		
DosSubAlloc		DOSCALLS	API/FAPI		
DosSubFree		DOSCALLS	API/FAPI		
DosSubSet		DOSCALLS	API/FAPI		
DosWrite		DOSCALLS	API/FAPI		
DosAllocHuge		DOSCALLS	API/FAPI		
DosAllocSeg		DOSCALLS	API/FAPI		
DosCaseMap		DOSCALLS	API/FAPI		
DosDevIOCtl		DOSCALLS	API/FAPI		
DosError		DOSCALLS	API/FAPI		
DosExecPgm		DOSCALLS	API/FAPI		
DosExit		DOSCALLS	API/FAPI		
DosFileLocks		DOSCALLS	API/FAPI		
DosFindClose		DOSCALLS	API/FAPI		
DosFindFirst		DOSCALLS	API/FAPI		
DosFindNext		DOSCALLS	API/FAPI		
DosGetCtryInfo		DOSCALLS	API/FAPI		
DosGetDBCSEv		DOSCALLS	API/FAPI		
DosHoldSignal		DOSCALLS	API/FAPI		
DosOpen		DOSCALLS	API/FAPI		

Name	Description	Module (OS/2)	Library (DOS)	Status (OS/2)	Status (DOS)
DosQFileInfo		DOSCALLS	API/FAPI		
DosRead		DOSCALLS	API/FAPI		
DosReallocHuge		DOSCALLS	API/FAPI		
DosReallocSeg		DOSCALLS	API/FAPI		
DosSetCtryCode		DOSCALLS	API/FAPI		
DosSetFHandState		DOSCALLS	API/FAPI		
DosSetSigHandler		DOSCALLS	API/FAPI		
KbdCharIn		KBDCALLS	API/FAPI		
KbdFlushBuffer		KBDCALLS	API/FAPI		
KbdGetStatus		KBDCALLS	API/FAPI		
KbdSetStatus		KBDCALLS	API/FAPI		
KbdStringIn		KBDCALLS	API/FAPI		
KbdPeek		KBDCALLS	API/FAPI		
VioGetBuf		VIOCALLS	API/FAPI		
VioGetCurPos		VIOCALLS	API/FAPI		
VioGetCurType		VIOCALLS	API/FAPI		
VioGetPhysBuf		VIOCALLS	API/FAPI		
VioReadCellStr		VIOCALLS	API/FAPI		
VioReadCharStr		VIOCALLS	API/FAPI		
VioScrollDn		VIOCALLS	API/FAPI		
VioScrollLf		VIOCALLS	API/FAPI		
VioScrollRt		VIOCALLS	API/FAPI		
VioScrUnLock		VIOCALLS	API/FAPI		
VioSetCurPos		VIOCALLS	API/FAPI		
VioSetCurType		VIOCALLS	API/FAPI		
VioSetMode		VIOCALLS	API/FAPI		
VioShowBuf		VIOCALLS	API/FAPI		
VioWrtCellStr		VIOCALLS	API/FAPI		
VioWrtCharStr		VIOCALLS	API/FAPI		
VioWrtCharStrAtt		VIOCALLS	API/FAPI		
VioWrtNAttr		VIOCALLS	API/FAPI		
VioWrtNCell		VIOCALLS	API/FAPI		
VioWrtNChar		VIOCALLS	API/FAPI		
VioWrtTTY		VIOCALLS	API/FAPI		
VioScrLock		VIOCALLS	API/FAPI		

Limitations

Real Mode

- max. 640K memory
- no virtual address space
- no multitasking

- no undocumented OS services
- If the filename of an executable produced by BIND is changed, then it will not run under DOS 2.1.

Protected Mode

- 16 MB memory
- 1GB virtual address space

Notes

This text based on http://www.edm2.com/index.php/Family_API