

SubQMod's Macro Assembler for the Atari Jaguar

Revision History

Revision 1.0.12 - 15th December 2008

- First 'public beta' of SMAC to be released. This is to ensure as large a group of developers contribute to fine tuning the tool.
- Fixed an issue where the `equrundef` directive was not recursively undefining comma separated registers on the same code line (identified by Atari_Owl).
- Fixed an issue where labels defined with the same name as '^' operators failed to tokenize correctly. For example; a label of 'time' was tokenized as '^time' (identified by Atari_Owl).

Revision 1.0.11 - 26th November 2008

- Updated the non-Windows 'makefile' to match 'nmakefile' capabilities.
- Fixed an issue with ORG'd addresses where they were being reset on every change of code section (gpu, dsp, 68000) instead of only where a relevant section change was made; e.g. from a gpu section to a 68000 section (identified by JagMod).
- Fixed an issue in the risc assembler core where SMAC would crash if trying to use a register symbol that was not defined (identified by JagMod).
- Removed a lot of legacy debug code and comments.
- Updated and tested 'nmakefile' against Microsoft Visual Studio 2005. If building from the command line you will need to ensure that the environment variables for the MSVC system are preloaded or the `vsvars32.bat` has been executed.
- Added source code to core distribution that handles the state machines and definitions for mnemonics, directives and keywords. Also updated makefiles to reflect the additional code. Complete package can be built with makefiles using the 'all' target.
- Added the '.fail/fail' directive, which aborts SMAC. To be used in conditional assembly and similar situations. An example of the message displayed when using '.fail' is:

```
test.s[23]: Fatal: user abort
```

- Updated makefiles to ensure the defines for WIN32 and `__GCCUNIX__` are made here rather than in the code.
- Added a makefile for MSVC (currently only tested on MSVC 6), 'nmakefile'. If building from the command line you will need to ensure that the environment variables for the MSVC system are preloaded or the `vcvars32.bat` has been executed.

```
To build;                nmake -f nmakefile all
```

```
To clean build dir:      nmake -f nmakefile clean
```

Revision 1.0.10 - 12th November 2008

- Fixed an issue (with the very kind help of belboz) that was causing binary includes to fail under the PowerPC architecture. Inclusion of the unistd.h file has resolved this.
- Created a makefile for use with non-Windows systems. Now included in source distribution.
- Changed error, warning and fatal messages to suit PC/DOS most frequent syntax, as per Atari's MAC;

Old style: "test.s",line 4: error message

New style: test.s[4]: Error: error message

- "IMACN instruction must precede RESMAC instruction" error now issued if correct opcode ordering not adhered to (identified by JagMod).
- Processor endianness is now automatically detected.
- Fixed an issue with include files during the build conditionals (identified by belboz).
- "GPU/DSP code outside of absolute section" warning now issued if no org address specified in a risc code section (identified by JagMod).
- "IMULTN/IMACN instruction must precede IMACN instruction" error now issued if correct opcode ordering is not adhered to (identified by JagMod).

Revision 1.0.9 - 28th October 2008

- Converted source files to UNIX format to ease multi-platform compilation.
- Disabled the deprecated function warnings on Visual C++ compilers.
- Some further work completed on removing compiler warnings on non-MSVC 6 systems. This work is ongoing.
- Defaulted object file format to BSD. After removal of the other formats this change had not been made resulting in a zero length output file (identified by JagMod).

Revision 1.0.8 - 27th October 2008

- Alcyon DRI, Mark Williams and PRG output is now deprecated.
- The following source files have been deprecated; mwobj.h and mwobj.c.
- Big clear up of warning messages. No warning messages now produced on MSVC 6.
- Fixed an issue when equating a label to a previously equated register value. No longer errors and transfers the symbols attributes and values across to the new label (identified by JagMod).
- The following source files have been deprecated; 6502.h, 6502a.c, 6502a.h, 6502kw.h and qsort.c. Please modify your makefiles accordingly.
- 6502 assembler module removed.
- Fixed a bug in the macro expansion routines that was not recognizing RISC register definitions (r0 thru r31) (identified by belboz).

Revision 1.0.7 - 24th October 2008

- ('^^') operators implemented; ^^defined, ^^referenced, ^^streq, ^^macdef, ^^date and ^^time.
- Updated warning and error output so that if an (-e) error file is not defined these messages are displayed on the standard output thus allowing the output to be redirected on the command line (requested by Thunderbird).
- Fixed an incorrect fix up coding issue with risc numeric operands where the fix up value was being placed incorrectly in the opcode word.
- Fixed an issue with the symbol table dump in listing files. Symbols are no longer displayed if they were equated registers and then undefined.
- Fixed an issue found with equated registers. When a register is equated from an existing equated register its ultimate symbol value should be the same with the exception of the bank flags. This has been implemented to ensure compliance with MAC operation.
- Fixed a fix up record issue in relation to JR risc instructions.
- Stopped SMAC erroring when it tried to undefine an equated register that does not exist.
- Further parser modifications made, especially in reference to risc register evaluation routines.
- SMAC now recognizes the '-g' flag and displays a warning that it is not yet implemented instead of bombing out (requested for Thunderbird).
- Fixed issues in the relocation record image creation routine to ensure that TEXT and DATA segments are correctly written (identified by Tursi).

Revision 1.0.6 - 22nd October 2008

- 'JR+MOVIE', 'JUMP+MOVIE', 'JR+JR', 'JR+JUMP', 'JUMP+JR', 'JUMP+JUMP', 'JR+MOVE PC' and 'JUMP+ MOVE PC' GPU restriction testing implemented. A warning is displayed, and a NOP instruction is inserted. Note that this cannot append when padding mode is ON (.jpad).
- Implemented .jpad and .nojpad directives.
- Rather than list them all here I have made a load of changes to how MOVEI swapped words are handled in all aspects from fix ups to relocations.
- Fixed an issue with image markup processing to ensure swapped words relating to MOVEI instructions are correctly updated.
- Fixed an issue with pseudo symbol '*' asterisk where it was not defined as absolute which affected the relocation records associated with it.
- Fixed issues with the pseudo symbol '*' asterisk where an org'd address was not being evaluated.
- Fixed an issue with the pseudo symbol '*' asterisk that was not evaluating correctly when specified on its own.
- Fixed some minor parser issues in the risc load and store opcodes.

Revision 1.0.5 - 20th October 2008

- Fixed an issue with `dc.l` directives that was incorrectly fixing up a value as a movei swapped value.
- Rewrote the risc 'store' assembler code as it was both not parsing correctly and miscoding the opcode in some cases.
- Rewrote the risc 'load' assembler code as it was both not parsing correctly and miscoding the opcode in some cases.
- Implemented a check for the end of a relocation list.
- Implemented PC relative fixups in the relocation records.
- Fixed a minor conditional bug in the expression parser that was causing SMAC to crash when in release build.
- New function added to `risca.c` to convert a string to uppercase. This has been added to ensure multi-platform builds are possible (identified by belboz).
- EA generation prototypes moved from local to global declaration (identified by belboz).
- Prototypes in `mach.h` and `direct.h` have been reviewed, updated or removed to ensure accuracy during compilation (identified by belboz).
- Compiler include files relating to file handling have been set accordingly in the relevant target specific section (identified by belboz).
- Target specific file 'open' flags have been defined and utilizing source code changed accordingly (identified by belboz).
- Have created a new target specific build section in `smac.h` (originally this was located in `version.h`). To build on Windows; `WIN32` will need to be defined, to build on LINUX or MAC OS/X; `_GCCUNIX` will need to be defined.
- Reworked the entire risc assembler module to use an evaluation in all possible cases. New code added to ensure that forward referenced labels, equates etc. are correctly fixed up at the end of the first and only source pass (identified by belboz, Thunderbird and JagMod).
- Source file `6502.c` is now deprecated. `6502a.c` supersedes this file.

Revision 1.0.4 - 17th October 2008

- Fixed a bug in the `.equr` directive where the definition of the required bank was not being parsed correctly or set correctly in the symbols value.
- Fixed a bug in the risc `jr/jump` instruction where a 'unknown condition code' error was raised if an inbuilt condition was in lower or mixed case.
- Fixed a bug in the relocation image processing function that was traversing beyond the relocation table causing SMAC to crash.
- Fixed an issue with `org'd` addresses where the `org` address was not incrementing correctly in all scenarios.
- Fixed an issue with risc `jr/jump` instruction that was not correctly detecting a 'jump always' condition.
- Implemented the initial risc `jr/jump` warnings if main code rules are broken.
- Implemented `.gpumain` directive. Primarily this enables the rules sets for executing gpu risc code in main memory.

Revision 1.0.3 - 17th October 2008

- Updated macro creation to allow macro's to use processor mnemonics (requested by JagMod).
- Replaced several processing elements of the .print directive with an expression evaluation routine (identified by JagMod).
- Updated the .print directive to allow print format tokens in both upper and lower case (identified by JagMod).
- Updated the moveq risc instruction to evaluate the register one value rather than expect a constant (identified by JagMod).

Revision 1.0.2 - 16th October 2008

- Implemented .print directive.
- Implemented .ccdef and .ccundef directive.
- Implemented .dc.i directive for use with the GPU/DSP MOVEI instruction.
- Implemented .nolist directive.
- Implemented .macundef directive.
- Implemented '-r' command line flag for user specified segment padding.

Revision 1.0.1 - 15th October 2008

- Cleaned up source to remove warnings during MSVC6 compilation.
- C-Style '//' comments permitted in source code.
- Implemented .equrundef and .regundef directives.
- Fixed a bug in the DATA relocation code to exit when no relocation data (instead of crashing).

Revision 1.0.0 - 14th October 2008

- Implemented separate TEXT and DATA segment relocation tables for BSD COF.
- Implemented object relocations and fix up for the JR risc instruction.
- Implemented object relocations and fix up for the MOVEI risc instruction.
- Fixed a bug in the risc assembler relating to register acquisition. A misplaced token increment was causing the register number to be incorrectly calculated.
- Implemented .incbin directive.
- Fixed a signed/unsigned value issue in the chcheck() routine that was incorrectly reporting the amount of available segment chunk remaining.
- Fixed a misaligned pointer issue in the rept line code.
- Implemented memory allocation manager to improve heap management.
- Fixed an issue with the date output in listing files. The date string was being filled by other information.
- The .noclear directive is recognized by the tokenizer but is not implemented.
- Fixed a macro expansion bug. Once a macro had been expanded it wasn't returning to the calling source due to null pointer issues.
- Checking added to ensure the directives .init, .cargs, .text, .data and .bss are forbidden in GPU/DSP mode.

- The `.abs` directive has been re-implemented. The directive name has changed to `.offset` to avoid conflicts with the ABS RISC instruction.
- Checking added to ensure `.equ` and `.regequ` directives can only be used in a GPU or DSP code section.
- Checking added to ensure `.gpu` and `.dsp` directives can only be used in the TEXT or DATA segment.
- Implemented `.long`, `.phrase`, `.dphrase` and `.qphrase` directives.
- Extended the `.org` directive to work correctly in RISC code.
- Fixed listing file to display 'e' for equated registers.
- Implemented RISC assembler.
- Each time you declare a new GPU/DSP section, SMAC internal status is reset to 'no default bank'.
- Added `".regbank0"` and `".regbank1"` directives.
- Added `".equ"` and `".regequ"` directives. You can also specify the bank of the register.
- MACPATH deprecated, must use SMACPATH.
- Removed `'.load'` and `'.abs'` directives.
- Added BSD COF object file functionality.
- Added `.equ` functionality as this was missing.
- New source code base aimed at replicating MAC as closely as possible. This is a new revision for development testing.