Rabbits

and the rest of the Z80 family

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Z80 family

- Zilog Z80 - derived from Intel 8080
- Z80N - ZX Spectrum Next softcore
- Sharp SM83
- ASCII R800
- Zilog Z180
- Zilog Z380
- Zilog eZ80
- Rabbit 2000 (further derivatives: Rabbit family)
- Toshiba TLCS-90 (further derivatives: TLCS-870 and TLCS-900 families)
- NEC 78K (GCC)
- Renesas RL78 (GCC)

Z80 family TODO

- Better handling of global variables
- Pointers into __sfr named address space for I/O

eZ80

- Z180 derivative
- Additional instructions, registers extended to 24 bits
- Z80 mode: registers handled as 16 bits, ADL mode: registers handled as 24 bit; separate stacks
- Mode can be switched persistently, but also for individual instructions with prefix byte
- LLVM port uses ADL mode
- SDCC port uses Z80 mode (more efficient when handling 8/16 bit data)
- SDCC port limited to 16 bit address space
- TODO: __far intrinsic named address space to allow use of 24-bit addresses for data using ADL mode prefix
- Mixing use of 16-bit and 24-bit register accesses complicates interrupt handling

Rabbit family

- Z80 derivative, inspired by Z180
- Rabbit 2000: additional instructions
- Rabbit 3000A: additional instructions
- Rabbit 4000: additional instructions and registers
- Rabbit 6000: additional instructions
- From Rabbit 4000: 4 modes: Default (better 8-bit support), Enhanced (better 16/32-bit support), 2 undocumented
- SDCC ports for Rabbit 2000, Rabbit 2000A, Rabbit 3000A
- SDCC ports limited to 16 bit address space

Rabbit family TODO

- SDCC ports for Rabbit 4000, Rabbit 5000, Rabbit 6000 (assembler, compiler, simulator) using one of the undocumented modes
- Use JK register pair - first time new register allocator is used for more than 9 registers.
- No plans to support the PW, PX, PY, PZ 32-bit registers
- __far intrinsic named address space to allow use of 20-bit addresses
- medium and large memory models to allow use of 20/24 bit and 24/32 bit addresses for code
- Better flash tool and on-target debugging

TLCS family

- TLCS-90: Z80 with additional instructions, different opcode map
- TLCS-870: TLCS-90 with additional and removed instructions, unknown opcode map
- TLCS-870/X: TLCS-870 with additional instructions, unknown opcode map
- TLCS-870/C: TLCS-870 with additional instructions, different opcode map
- TLCS-870/C1 and TLCS-870/C1E: TLCS-870/C with additional instruction, different timing
- TLCS-900 family: 32-bit registers
- SDCC port for TLCS-90
- SDCC port limited to 16 bit address space
- Lack of documentation

TLCS family TODO

- SDCC ports for TLCS-870, TLCS-870/C, TLCS-870/C1
- Handle different code size in cost function
- __far intrinsic named address space to allow use of 20-bit addresses for TLCS-90
- No plans to support TLCS-870/X, TLCS-900 family
- Free flash tool

Summary

- Additional ports to better support Rabbit 4000, Rabbit 5000, Rabbit 6000, TLCS-870, TLCS-870/C, TLCS-870/C1 (assembler, compiler, simulator)
- __far for eZ80 and Rabbits
- Larger address space for code for Rabbits
- Various smaller improvements
- Work on eZ80 and Rabbit this year (i.e. in time for SDCC 4.6.0), TLCS-870 family later