Standard library for PREV'25

I/O

- `puts(str: ^char): void` - Print string
- `putint(x: int): void` - Print signed integer
- `putchar(c: char): void` - Print character
- `getchar(): char` - Read character
- `gets(buf: ^char, size: int): int` - Read line into buffer
- `getint(): int` - Read integer (skips whitespace)

Number Formats

- `putint_hex(x: int): void` - Print as hex
- `putuint(x: int): void` - Print as unsigned
- `putint_bin(x: int): void` - Print as binary

Memory

- `new(size: int): ^any` / `malloc(size: int): ^any` - Allocate memory
- `del(ptr: ^any): void` / `free(ptr: ^any): void` - Free memory (no-op)

Arrays

- `at(ptr: ^any, idx: int): ^any` - Array access (8-byte elements)
- `at_sys(ptr: ^any, idx: int, size_of_any: int): ^any` - Array access (custom size)

Random

- `random(lower: int, upper: int): int` - Random int in range
- `seed(value: int): void` - Set RNG seed

Formatted

- `printf_sys(format: ^char, ...): void` - Formatted print (basic: %d, %c, %s, %)

Syscall Codes and Arguments for Ripes / RV64M

Register Mapping (RISC-V calling convention)

- **a0** = x10 = first argument (`arg0`)
- **a1** = x11 = second argument (`arg1`)
- **a2** = x12 = third argument (`arg2`)
- **a3** = x13 = fourth argument (`arg3`)
- **a4** = x14 = fifth argument (`arg4`)
- **a5** = x15 = sixth argument (`arg5`)
- **a6** = x16 = seventh argument (`arg6`)
- **a7** = x17 = syscall code

Syscall Table for Ripes

Name	Code	Arguments (by register)	Returns (in a0)	Description
PrintInt	1	a0: integer to print	—	Prints an integer

Name	Code	Arguments (by register)	Returns (in a0)	Description
PrintFloat	2	a0: float to print	—	Prints a floating-point number
PrintStr	4	a0: address of null-terminated string	—	Prints a string
Exit	10	a0: exit code	—	Exits program
PrintChar	11	a0: character to print (lowest byte used)	—	Prints a single character
GetCWD	17	a0: buffer address a1: buffer length	a0: 0 on success, -1 on error	Writes CWD path into buffer
TimeMs	30	—	a0: time in milliseconds	Returns current time in ms
Cycles	31	—	a0: cycle count	Returns current cycle count
PrintIntHex	34	a0: integer to print	—	Prints an integer in hex
PrintIntBinary	35	a0: integer to print	—	Prints an integer in binary
PrintIntUnsigned	36	a0: integer to print	—	Prints an unsigned integer
Close	57	a0: file descriptor	a0: 0 on success, -1 on error	Closes a file
LSeek	62	a0: file descriptor a1: offset a2: whence	a0: new offset, -1 on error	Seeks in a file
Read	63	a0: file descriptor a1: buffer address a2: max bytes to read	a0: number of bytes read, -1 on err	Reads from a file descriptor
Write	64	a0: file descriptor a1: buffer address a2: number of bytes to write	a0: number of bytes written	Writes to a file descriptor
FStat	80	a0: file descriptor a1: address of struct stat	a0: 0 on success, -1 on error	Gets info about a file
Exit2	93	a0: exit code	—	Exits program (alternate)
brk	214	a0: address	a0: 0 on success, -1 on error	Increases program data space
Open	1024	a0: pointer to path a1: flags	a0: file descriptor or -1 on error	Opens a file

References:

- Syscall codes and argument lists
- Syscall class and documentation
- RISC-V calling convention