File Calc - File Specifications

Cyber Solutions Development - Tactical

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1 EQU File Header

This is the overall header format that you will be presented with. Be sure to note the magic number. This will tell you if a file is valid. If there is any deviation from this format, the program should report an error. Solved and Unsolved files will have the same overall header. They will be differentiated by the "Flags" field.

Name	**Magic Number**	**FileID**	**Number of Equations**	**Flags**	**Equation Offset**	**Number of Opt Headers**
Length (Bytes)	4	8	8	1	4	2
Purpose	Magic	Unique File ID	Number of Equations in File	Unsolved=0x00 Solved=0x01	Offset to Equations	**RESERVED**

1.1 Unsolved Equation Format

Unsolved Equation files will be prefixed with the Equation Header, with Flags set to 0. The format for Unsolved Equations is described below:

Name	**Equation ID**	**Flags**	**Equation**	**Padding**
Length (Bytes)	4	1	17	10
Purpose	Unique ID for Equation	**RESERVED**	Serialized Equation	Pad to 32 Bytes

1.1.1 Serialized Equation Format

This describes the 17 byte "Equation" field of the Unsolved Equation Format specified above.

Name	Operand	Operator	Operand
Length (Bytes)	8	1	8
Purpose	64 Bit Integer	Operator Code	64 Bit Integer

NOTE: The Operator Code will determine if Operands are int64_t or uint64_t

1.2 Solved Equation Format

Solved Equation files will be prefixed with the Equation Header, with Flags set to 1. The format for Solved Equations is described below:

Name	Equation ID	Flags	Type	Solution
Length (Bytes)	4	1	1	8
Purpose	Unique Equation ID	Indicates Solved	Solution Type	64 Bit Integer

NOTE: Equation ID will be the same as the Unsolved Equation ID
NOTE: If an error occured in processing Equation, Solved will be set to 0
NOTE: The Type will correspond to a type (int64_t, uint64_t, etc)

2 Operator and Status Definitions

Operation	Code	Data Type
Addition	0x01	int64_t
Subtraction	0x02	int64_t
Multiplication	0x03	int64_t
Division	0x04	int64_t
Modulo	0x05	int64_t
Shift Left	0x06	uint64_t
Shift Right	0x07	uint64_t
AND	0x08	uint64_t
OR	0x09	uint64_t
XOR	0x0a	uint64_t
Rotate Left	0x0b	uint64_t
Rotate Right	0x0c	uint64_t
Other Codes are not supported, and an Error should be indicated		

Code	Data Type
0x01	int64_t
0x02	uint64_t
0x03	float
Other Data Types are currently not supported, and an Error should be indicated	