Tasks	Description	Phase 1																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
TA1: Cheesecloth																			
TA1.PH1.T1	Develop R1CS encoder for memory-safety vulnerabilities in LinState (G, CU,QEDIT)	▨	▨	▨	▨	▨	▨												
TA1.PH1.T2	Develop R1CS encoder for proofs of memory safety in LinState (G, CU, QEDIT)							▨	▨	▨	▨	▨	▨						
TA1.PH1.T3	Develop SCALE encoder for memory-safety vulnerabilities expressed using the LinState symbolic domain to the SCALE IR (G. CU. QEDIT)	▨	▨	▨	▨	▨	TA1. M1												
TA1.PH1.T4	Develop SCALE encoder for proofs of memory safety in LinState (G, CU, QEDIT)							▨	▨	▨	▨	▨	TA1. M2						
TA1.PH1.T5	Evaluate Cheesecloth on programs with memory-safety vulnerabilities (G)													▨	▨	▨			
TA1.PH1.T6	Evaluate Cheesecloth on programs with proofs of memory safety (G)																▨	▨	TA1. M3
TA2: Quark																			
TA2.PH1.T1	Lead collaborative effort to define APIs between TA1 and TA2 (QEDIT, G, CU)	▨	▨	▨	▨	▨	TA2. M1												
TA2.PH1.T2	Assist T&E team to ensure they can assess efficiency (G)	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
TA2.PH1.T3	Design, build, test Quark platform, input parsing & checking, no ZK back-ends (G, QEDIT)		▨	▨	▨	▨	▨	TA2. M2											
TA2.PH1.T4	Design (Aarhus, Leuven), build, test (Galois) private-coin verifier C&P backend (AU, G, L)		▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨		
TA2.PH1.T5	Design, build, test MPC-in-the-head backend for simple arithmetic & binary circuits (L, G, AU)		▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	TA2. M3		
TA2.PH1.T6	Research new MPC gadgets to enhance pre-processing, modulus switching (L, AU)		▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
TA2.PH1.T7	Characterize efficiency of Quark v1.0 and v1.0 for both backends (G, L, AU, QEDIT)														▨	▨	▨	▨	▨
TA2.PH1.T8	Meet regularly with TA1 to assure integration when Phase 2 arrives (G)		▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	TA2. M4
Both Tasks																			
Both.PH1.T1	PI Meeting attendance (G)	◆					🟧						🟧						🟧

Task	Description	Phase 2																	
		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
TA1: Cheesecloth																			
TA1.PH2.T1	Integrate abstractions for (dis)proving integer overflow (G, CU, QEDIT)	▨	▨	▨	▨	▨	▨												
TA1.PH2.T2	Evaluate Cheesecloth on programs with integer-overflow vulnerabilities (G)							▨	▨	▨									
TA1.PH2.T3	Evaluate Cheesecloth on programs with proofs of integer-overflow security (G)										▨	▨	▨						
TA1.PH2.T4	Integrate abstractions for (dis)proving secure performance (G, CU)							▨	▨	TA1. M4	▨	▨	▨						
TA1.PH2.T5	Evaluate Cheesecloth on programs with performance-security vulnerabilities (G)												TA1. M5	▨	▨	▨			
TA1.PH2.T6	Evaluate Cheesecloth on programs with proofs of performance security (G)																▨	▨	TA1. M6
TA2: Quark																			
TA2.PH2.T1	Develop integration plan with relevant TA1 performers (G)	▨							TA2. M5										
TA2.PH2.T2	Assist T&E team to ensure they can assess efficiency (G)	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
TA2.PH2.T3	Integrate and test Quark v1.0 with TA1 v1.0 suites (G)	▨	▨	▨	▨	▨	▨	▨	▨	▨									
TA2.PH2.T4	Implement C&P back end to meet Phase 2 goals (AU, G, L)	▨	▨	▨	▨	▨	▨	▨	▨	▨			TA2. M6						
TA2.PH2.T5	Research and implement Phase 2 Enhancements for MPC-in-the-Head (L, G, AU)	▨	▨	▨	▨	▨	▨	▨	▨	▨									TA2. M7
TA2.PH2.T6	Integrate Quark v2.0 (G, L, AU, QEDIT)										▨	▨	▨	▨					
TA2.PH2.T7	Research sublinearity and gadgets for C&P backend (AU)										▨	▨	▨	▨	▨	▨	▨	▨	▨
TA2.PH2.T8	Characterize efficiency of Quark v2.0 for both backends (G, L, AU, QEDIT)													▨	▨	▨	▨	▨	▨
Both Tasks																			
Both.PH2.T1	PI Meeting attendance (G)						🟧						🟧						🟧

Task	Description	Phase 3											
		37	38	39	40	41	42	43	44	45	46	47	48
TA1: Cheesecloth													
TA1.PH3.T1	Extend Cheesecloth to encode ZK problem statements of information-flow security (G, CU)	▨	▨	▨	▨								
TA1.PH3.T2	Evaluate Cheesecloth on programs with information-flow vulnerabilities (G)					▨	▨						
TA1.PH3.T3	Evaluate Cheesecloth on programs with information-flow security proofs (G)							▨	▨				
TA1.PH3.T4	Integrate abstractions for (dis)proving functional equivalence (G, CU)					▨	▨	▨	▨				
TA1.PH3.T5	Evaluate Cheesecloth on non-equivalent programs (G)									▨	▨		
TA1.PH3.T6	Evaluate Cheesecloth on programs with proofs of equivalence (G)											▨	TA1. M7
TA2: Quark													
TA2.PH3.T1	Assist TE team to ensure they can assess efficiency (G)	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
TA2.PH3.T2	Enhance C&P back end to meet Phase 3 goals (AU, G, L)	▨	▨	▨	▨	▨	▨	▨	▨				
TA2.PH3.T3	Phase 3 Enhancements for MPC-in-the-Head (L, G, AU)	▨	▨	▨	▨	▨	▨	▨	TA2. M8				
TA2.PH3.T4	Integrate Quark v3.0 (G, L, AU, QEDIT)							▨	▨				
TA2.PH3.T5	Characterize efficiency of Quark v3.0 for both backends with TA1s (G, L, AU, QEDIT)									▨	▨	▨	TA2. M9
Both Tasks													
Both.PH3.T1	PI Meeting attendance (G)						🟧						🟧

◆ Kickoff meeting

🟧 PI Meetings