Code Line # (starting from #10)	A-register	D-register	M-Register	ALU	Data Memory	Instruction Memory	Program Counter	Control/Address/Data bus
#10	The A-register is set to 17	NA	M register points to the memory that stores the variable I, RAM[17]	NA	The data memory is accessed to read RAM[17] that stores the value of i	The instruction memory input is set to address of #11	The program counter is set to PC++ -> address of #11 instruction	The control bits are sent to A register to load the value 17 The address of variable i is put into the address bus to access the memory location. The control bits are sent to the PC to increment its value by 1
#11	NA	D-register is = to value from RAM[17]	M-register, has a value that is from the RAM[17]	Recognises this as a C instruction. The ALU will perform the computation on the 7 bits and move it to its required location which is D	D register now consist of the values from RAM[17] in the memory	The instruction memory input is set to address of #12 instruction	Program counter is fixed to PC++ of #12	The control bits will load the value of register D as RAM[17] value. The control bit are delivered to the PC to transcend its value by 1.
#12	The A-register is changed to 18	NA	Directs to the memory that store. The variable sum, RAM[18]	NA	Is accessed to read RAM [18] that value of sum	The instructions memory input is set to address of #13 instruction	The program counter is fixed to PC++ of #13	Control bits are sent to A register to load the value 18. The address of variable sum is put into the address bus to access the memory location. The control bits are sent to the PC to increment its value by 1
#13	NA	D-register is = to value from RAM[18]	M's new value will store RAM[17] + RAM[18] Which will be stored in the system.	Performs the computation (10000010) -> D+M, which will be saved into the destination (001) -> M	M register now contains the value of RAM[18] into memory	The instruction memory input is set to address of #14 instruction	Program counter is fixed to PC++ of #14	Control bits load the value of Register D as RAM[17] Data bus now contains the value of D as RAM[17] value. The control bits are sent to the PC to increment its value by 1
#14	The A-register is changed to 19	NA	Directs to the memory that store. The variable sum,	NA	M register now contains the value of RAM[18	The instruction memory input is set to address of #15 instruction	Program counter is fixed to PC++ of #15	The control bits will load the value of register D as RAM[17] value. The control bit are delivered to the PC to transcend its value by 1.

			RAM[18]		] into memory			
#15	NA	D-register is = to value from RAM[19]	M's new value will store RAM[17] + RAM[18] Which will be stored in the system.	Recognises this as a C instruction. The ALU will perform the computation on the 8 bits and move it to its required location which is D	M register now contains the value of RAM[18] into memory	The instruction memory input is set to address of #16 instruction	Program counter is fixed to PC++ of #16	The control bits will load the value of register D as RAM[17] value. The control bit are delivered to the PC to transcend its value by 1.
#16	The A-register is changed to 20	NA	Directs to the memory that store. The variable sum, RAM[18]	NA	M register now contains the value of RAM[18] into memory	The instruction memory input is set to address of #17 instruction	Program counter is fixed to PC++ of #17	The control bits will load the value of register D as RAM[17] value. The control bit are delivered to the PC to transcend its value by 1.
#17	NA	D-register is = to value from RAM[20]	M's new value will store RAM[17] + RAM[18] Which will be stored in the system.	Recognises this as a C instruction. The ALU will perform the computation on the 9 bits and move it to its required location which is D	M register now contains the value of RAM[18] into memory	The instruction memory input is set to address of #18 instruction	Program counter is fixed to PC++ of #18	The control bits will load the value of register D as RAM[17] value. The control bit are delivered to the PC to transcend its value by 1.
#18	The A-register is changed to 21	NA	Directs to the memory that store. The variable sum, RAM[18]	NA	M register now contains the value of RAM[18] into memory	The instruction memory input is set to address of #19 instruction	Program counter is fixed to PC++ of #19	The control bits will load the value of register D as RAM[17] value. The control bit are delivered to the PC to transcend its value by 1.
#19	NA	D-register is = to value from RAM[21]	Directs to the memory that store. The variable sum, RAM[18]	Recognises this as a C instruction. The ALU will perform the computation on the 10 bits and move it to its required location which is D	M register now contains the value of RAM[18] into memory	The instruction memory input is set to address of #20 instruction	Program counter is fixed to PC++ of #20	The control bits will load the value of register D as RAM[17] value. The control bit are delivered to the PC to transcend its value by 1.
#20	The A-register	NA	Directs to the	NA	M register	The instruction	Program counter is	The control bits will load the value of

	is changed to 22		memory that store. The variable sum, RAM[18]		now contains the value of RAM[18] into memory	memory input is set to address of #21 instruction	fixed to PC++ of #21	register D as RAM[17] value. The control bit are delivered to the PC to transcend its value by 1.