Problem ST-2 (3 parts) Pointers and Arrays

Assuming a 32-bit system with 32-bit memory interface and 32-bit addresses, answer the following questions. The following variables are allocated in memory beginning at address 5000.

Part A Complete the memory map below with the variable names at each word or byte in memory. Do not include the variable's value.

```
double A;
double B;
double *P = &A;
float  C[] = {3.14, 6.28};
char   S[] = "Help!";
float  *Q = &(C[1]);
```

5000				
5004				
5008				
5012				
5016				
5020				
5024				
5028				
5032				
5036				
5040				

Part B Determine the numerical values for the following expressions.

P	_____	**P++**	_____	***(C+1)**	_____	**&Q**	_____
Q	_____	***(Q-1)**	_____	**S[1]**	_____	**&(S[3])**	_____

Part C Write the MIPS code implementation of the dynamically allocated array access below in the smallest number of instructions. A pointer to the array (declared below) is stored in $3. Variables A and B reside in $4 and $5, respectively. Modify only $1 and $2 and the indexed memory location.

```
int      Array[17][8];     /* array declaration */
Array[A][B] = 25;          /* implement this */
```

Label	Instruction	Comment