1. Write a function named bitcount that returns the number of 1-bit in the input argument that is an unsigned integer (contained in register $a0), and a test driver (main function) to test the function bitcount. The test driver prompts the user for a decimal unsigned integer, calls bitcount and then displays the result. For example, if the user gives 17 as the input, the program displays "The number of 1-bit is 2". Submit the source code as well as the screen shot showing the program runs correctly with several test runs (refer to the syllabus for requirements of programming assignments.)

2. Consider the following C code snippet:  
  
// C code  
void setArray(int num)  
{  
 int i;  
 int array[10];  
 for (i=0; i < 10; i=i+1)  
 {  
 array[i]=compare(s1, s0);  
 }  
}  
int compare(s1, s0)  
{  
 if (sub(s1, s0) >= 0)  
 return 1;  
 else  
 return 0;  
}  
int sub(int s1, int s0)  
{  
 return a−b;  
}  
Implement the C code snippet above in MIPS assembly language. Use $s0 to hold the variable i. Be sure to handle the stack pointer appropriately. The array is stored on the stack of the setArray function (i.e. when setArray function is called it allocates space for the array on the stack.).