COMP - Intro to Compilers II

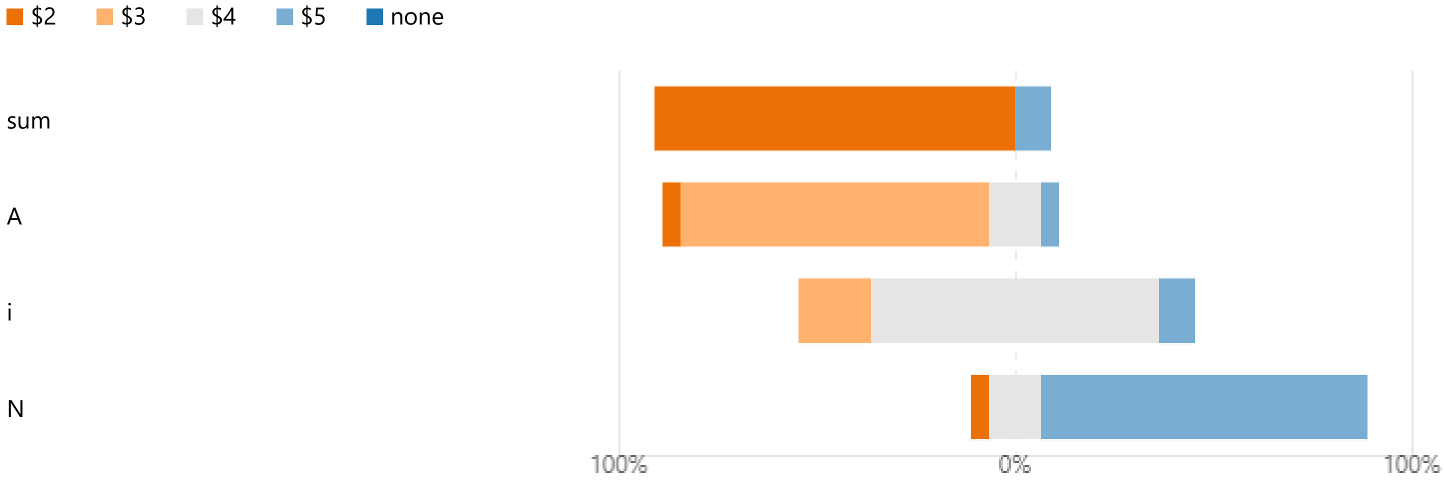
22
Responses

3.8
Average Score

Active
Status

1. Consider the following C function and the output assembly code by gcc -O0 for MIPS: int sum(int A[], int N) { int i, sum = 0; for(i=0; i<N; i++) { sum = sum + A[i]; } return sum; } //sum(int*, int): 1. blez $5,$L4 2. sll $5,$5,2 3. addu $5,$4,$5 4. move $2,$0 $L3: 5. lw $3,0($4) 6. addiu $4,$4,4 7. bne $5,$4,$L3 8. addu $2,$2,$3 9. j $31 9. nop $L4: 10. j $31 11. move $2,$0

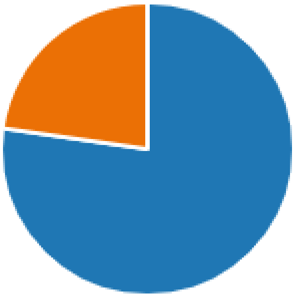
2. Indicate the register the compiler assigned to each variable: (1 point)



3. Why did the compiler output an instruction after each j (jump) instruction? (1 point)

77% of respondents (17 of 22) answered this question correctly.

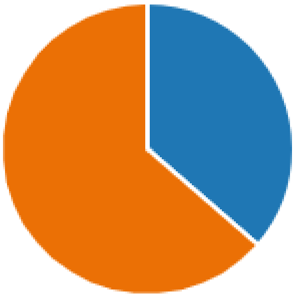
● because the target MIPS proc...	17	✓
● because the branch may not b...	5	



4. The compiler optimized the code considering that the loop executes at least 1 iteration (1 point)

64% of respondents (14 of 22) answered this question correctly.

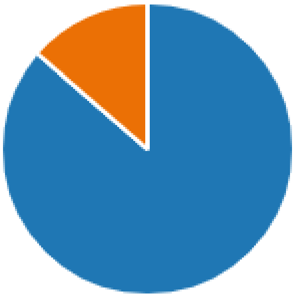
● TRUE	8	
● FALSE	14	✓



5. The implementation of the FOR loop is similar to (1 point)

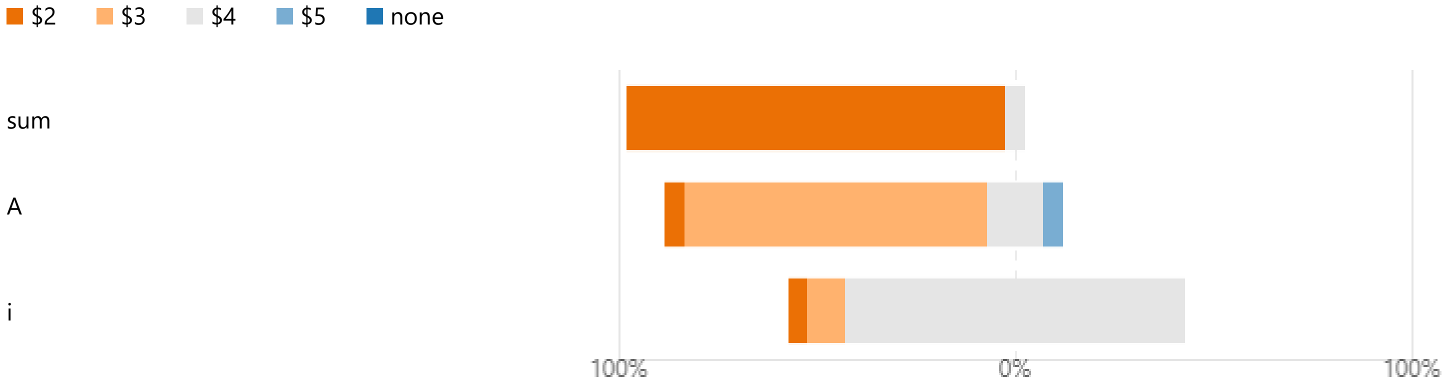
86% of respondents (19 of 22) answered this question correctly.

● a do...while	19	✓
● a while	3	



6. Consider the following C function and the output assembly code by gcc -O0 for MIPS:
#define N 1000 int sum(int A[]) {   int i, sum = 0;   for(i=0; i<N; i++) {   sum = sum + A[i];   }
   return sum; } //sum(int*): 1.   addiu $5,$4,4000 2.   move $2,$0 $L2:
3.   lw $3,0($4) 4.   addiu $4,$4,4 5.   bne $5,$4,$L2 6.   addu $2,$2,$3
7.   j $31 8.   nop

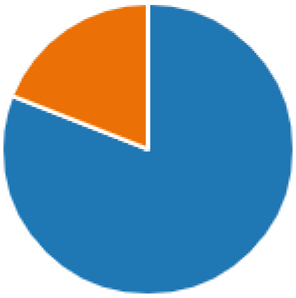
7. Indicate the register the compiler assigned to each variable: (1 point)



8. The compiler optimized the code considering that the loop executes at least 1 iteration (1 point)

81% of respondents (17 of 21) answered this question correctly.

● TRUE	17	✓
● FALSE	4	



9. The implementation of the FOR loop is similar to (1 point)

73% of respondents (16 of 22) answered this question correctly.

● a do...while	16	✓
● a while	6