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ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION
DURATION: 1 HOUR 30 MINUTES

SUMMER SEMESTER, 2022-2023
FULL MARKS: 50

CSE 4271: Computer Programming

Programmable calculators are not allowed. Do not write anything on the question paper.

Answer all 3 (three) questions. Figures in the right margin indicate full marks of questions with corresponding COs and POs in parentheses.

1. a) Write a program that takes 10 integers as input from the user and stores them in an array. Find the sum of the integers in the even indices of the array. Similarly, find the sum of the integers in the odd indices of the array. 7
(CO3)
(PO2)
- b) Consider the code given in Code Snippet 1. Extend this code so that the array C contains all the integers from arrays A and B in ascending order. Note that you need to use some sorting algorithm. 10
(CO3)
(PO2)

```
1 #include <stdio.h>
2 int main (void)
3 {
4     int A[] = {4, 6, 8, 0, -3};
5     int B[] = {3, -2, 9, 1, 6};
6     int C[10];
7 }
```

Code Snippet 1: C program for Question 1.b

2. a) Write a program that keeps taking character inputs from the user until a non-alphabetic character is entered. Then the program prints the number of vowels and uppercase letters the user entered. Do not use any arrays. A sample output for the code is shown in Table 1. 10
(CO3)
(PO2)

Table 1: Sample output for Question 2.a

Sample Input	Sample Output
Enter character: U	Total vowels: 3
Enter character: a	Total uppercase letters: 2
Enter character: m	
Enter character: I	
Enter character: k	
Enter character: ?	

- b) Fibonacci sequence is a sequence in which each number is the sum of the two preceding ones. First two number of the sequence is 0 and 1. Write a program that takes two integers and prints all the numbers of the Fibonacci sequence that fall within the two integers [inclusive]. Some sample outputs for the code is shown in Table 2. 10
(CO3)
(PO2)

Table 2: Sample output for Question 2.b

Sample Input	Sample Output
5 7	7
0 8	0 1 1 2 3 5 8
8 14	8 13

3. a) Write down the output of the code in Code Snippet 2.

```

1 #include <stdio.h>
2 int main (void)
3 {
4     int i, j, k;
5     for(i = 0, j = 0; i < 5, j < 5; i++, ++j){
6         printf("Inside for loop %d %d\n", i, j);
7     }
8     while(++i < 12 && j++ < 12){
9         printf("Inside while loop %d %d\n", i, j);
10        for(k = 0; k < 3; ++k, ++i, ++j){
11            printf("Inside nested for loop %d %d %d\n", i, j, k);
12        }
13    }
14    return 0;
15 }

```

Code Snippet 2: C program for Question 3.a

- b) Consider the two codes in Code Snippet 3 and Code Snippet 4. Rewrite both of the codes using only the for loop.

```

1 #include <stdio.h>
2 int main()
3 {
4     int num;
5     int sum = 0;
6     do{
7         scanf("%d", &num);
8         sum += num;
9     }
10    while(num);
11    printf("Sum: %d", sum);
12 }

```

Code Snippet 3: C program for Question 3.b

```

1 #include <stdio.h>
2 int main()
3 {
4     int num;
5     while(1){
6         scanf("%d", &num);
7         if(!(num%2))
8             printf("Even\n");
9         else
10            printf("Odd\n");
11    }
12 }

```

Code Snippet 4: C program for Question 3.b