Assignment

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Subject: Programming Fundamentals

Problem 1:

Write a program to declare an array of size 10 and initialise the array with the user provided values.

Answer the following:

- 1. Find the minimum value in the array.
- 2. Find the maximum value in the array.
- 3. Find the sum of array.
- 4. Find the average/mean value of the array.
- 5. Display the last element of array.
- 6. Display the value at index 2.
- 7. Print numbers in reverse order.
- 8. Count Even and Odd Elements in array.
- 9. Print the sum of odd indices elements.

Code:

```
#include <stdio.h>
int main()
  int values[10] = \{2, 4, 9, 11, 8, 6, 20, 22, 33, 45\};
  int sum = 0, min, max, even = 0, odd = 0, odd indices = 0;
  float avg = 0;
  // Printing 10 elements of array
  printf("10 elements in array :");
  for (int i = 0; i < 10; i++)
     printf(" %d", values[i]);
  }
  // for finding minimum value in array
  min = values[0];
  for (int i = 0; i < 10; i++)
     if (min > values[i])
        min = values[i];
     }
  printf("\nMinimum Value is = %d", min);
  // for finding maximum value in array
  max = values[0];
  for (int i = 0; i < 10; i++)
```

```
{
  if (max < values[i])
     max = values[i];
  }
printf("\nMaximum Value is = %d", max);
// for finding sum of values in array
for (int i = 0; i < 10; ++i)
{
  sum = sum + values[i];
printf("\nSum of array alements = %d", sum);
// for finding average of values in array
for (int i = 0; i < 10; ++i)
{
  avg = sum / 10;
printf("\nAverage of array alements = %.2f", avg);
// Displaying the last elemnt of array
printf("\nLast Element of array = %d", values[9]);
// Displaying value at index 2
printf("\nValue at index 2 = %d", values[1]);
// Displaying values in reverse order
printf("\nValues in Reverse Order = ");
for (int i = 9; i >= 0; i--)
{
  printf("\n%d", values[i]);
// For finding even elements in array
for (int i = 0; i < 10; i++)
{
  if (values[i] \% 2 == 0)
     even++;
printf("\nEven elements in array = %d", even);
// For finding odd elements in array
for (int i = 0; i < 10; i++)
```

```
{
    if (values[i] % 2 != 0)
    {
        odd++;
    }
}
printf("\nOdd elements in array = %d", odd);

// For finding sum of odd indices
for (int i = 0; i < 10; i++)
{
    if (values[i] % 2 != 0)
    {
        odd_indices = odd_indices + values[i];
    }
}
printf("\nOdd indices Sum = %d\n", odd_indices);
return 0;
}</pre>
```

Output:

```
PROBLEMS
           OUTPUT
                     DEBUG CONSOLE
                                      TERMINAL
Mubashers-MacBook-Pro:Lab9 mubashershahzad$ ./Problem1.out
10 elements in array : 2 4 9 11 8 6 20 22 33 45
Minimum Value is = 2
Maximum Value is = 45
Sum of array alements = 160
Average of array alements = 16.00
Last Element of array = 45
Value at index 2 = 4
Values in Reverse Order =
45
33
22
20
6
8
11
9
4
Even elements in array = 6
0dd elements in array = 4
Odd indices Sum = 98
Mubashers-MacBook-Pro:Lab9 mubashershahzad$
```

Problem 2:

Write a C program that declares an array alpha of 60 components of type int. Initialize the array so that

the first 20 components are equal to the square of the index variable, and the next 20 components are

equal to three times the index variable. Last 20 elements are the sum of first 20 and last 20 indices.

Output the array so that 10 elements per line are printed.

Code:

```
#include <stdio.h>
int main()
{
    int alpha[60];
    int i, j, k;
    printf("Square of first 20 elements:\n");
    for (i = 0; i < 20; i++)
    {</pre>
```

```
alpha[i] = i * i;
    printf("%d\t\t", alpha[i]);
}
printf("\nCube of next 20 elements:\n");
for (j = 20; j < 40; j++)
{
    alpha[j] = j * j * j;
    printf("%d\t\t", alpha[j]);
}
printf("\nSum of first and last 20 elements:\n");
for (k = 40, i = 0, j = 20; k < 60, j < 40, i < 20; i++, j++, k++)
{
    alpha[k] = alpha[i] + alpha[j];
    printf("%d\t\t", alpha[k]);
}
return 0;
}</pre>
```

Output:

PROBLEMS	OUTPUT DEBUG	CONSOLE TERMI	NAL_					bash + ∨	
	-MacBook-Pro:Lab9		./Problem2.out						
Square of	first 20 elements								
0	1	4	9	16	25	36	49	64	81 1
00	121	144	169	196	225	256	289	324	361
Cube of n	ext 20 elements:								
8000	9261	10648	12167	13824	15625	17576	19683	21952	24389
27000	29791	32768	35937	39304	42875	46656	50653	54872	59319
Sum of fi	rst and last 20 el	ements:							
8000	9262	10652	12176	13840	15650	17612	19732	22016	24470
27100	29912	32912	36106	39500	43100	46912	50942	55196	59680
Mubashers	-MacBook-Pro:Lab9	mubashershahzad\$; []						

Problem 3:

Write a C program to find an element from an array. Each element will be checked. If searched element exists multiple time, then its count will also be shown.

Code:

```
#include<stdio.h>
int find(int a,int arr[]);

int main()
{
    int arr[10]={2, 4, 9, 4, 8, 6, 20, 4, 20, 45};
    int element;

    printf("Enter element to search in array\n[2 4 9 4 8 6 20 4 20 45]:");
    scanf("%d",&element);

    int flag=find(element,arr);

    if(flag==0)
```

```
printf("Element not found.%d",element);
else
printf("Element %d found %d times.",element,flag);

return 0;
}
int find(int a,int arr[])
{
   int count=0;
   for (int i = 0; i < 10; i++)
   {
      if(arr[i]==a)
      count++;
   }
   return count;
}</pre>
```

Output:

```
Mubashers-MacBook-Pro:Lab9 mubashershahzad$ ./Problem3.out
Enter element to search in array
[2 4 9 4 8 6 20 4 20 45]:4
Element 4 found 3 times.Mubashers-MacBook-Pro:Lab9 mubashershahzad$ ./Problem3.out
Enter element to search in array
[2 4 9 4 8 6 20 4 20 45]:20
Element 20 found 2 times.Mubashers-MacBook-Pro:Lab9 mubashershahzad$ ./Problem3.out
Enter element to search in array
[2 4 9 4 8 6 20 4 20 45]:6
Element 6 found 1 times.Mubashers-MacBook-Pro:Lab9 mubashershahzad$

■
```