Lab Assignment 5

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Contents

1

1.1 Code

```c
#include <stdio.h>
int main()
{
    printf("\n\n\n");
    int n, a[100], s = 0, i;
    printf("How many numbers do you wish to enter? ");
    scanf("%d", &n); //Amount of numbers to be entered
    for (i = 0; i < n; ++i)
    {
        printf(" Enter the number %d: ", i + 1);
        scanf("%d", &a[i]); //input the numbers
        s += a[i];          //find the sum of numbers in the array
    }
    printf("The mean of above numbers is: %f", (float)(s) / (float)(n));
    printf("\n\n\n");
    return 0;
}
```

1.2 Output

```
How many numbers do you wish to enter? 5
 Enter the number 1: 12
 Enter the number 2: 13
 Enter the number 3: 20
 Enter the number 4: 7
 Enter the number 5: 10
The mean of above numbers is: 12.400000
```

2

2.1 Code

```c
#include <stdio.h>
int main()
{
    printf("\n\n\n");
    int a[10] = {6, 4, 3, 5, 1, 9, 3, 7, 8, 2}, i, j, k = 0, length;
    length = sizeof(a) / sizeof(int); //length of array
    for (i = 0; i < length; ++i)
    {
        for (j = i + 1; j < length; ++j)
        {
            if (a[i] == a[j])
            {
                k++; //if no number is occuring more than once, k will remain zero
                break;
            }
        }
    }
    if (k == 0)
        printf("There's no duplicacy in the array");
    else
        printf("There is duplicacy in the array");
    printf("\n\n\n");
    return 0;
}
```

2.2 Output

```
There is duplicacy in the array
```

3

3.1 Code

```c
#include <stdio.h>
int main()
{
    printf("\n\n\n");
    int a[10] = {2, 6, 4, 3, 5, 1, 9, 7, 8, 2}, i, j, k = 0, length;
    length = sizeof(a) / sizeof(int); //length of array
    for (i = 0; i < length; ++i)
        printf("%d ", a[length - i - 1]); //length-i-1 will start printing from end
    printf("\n\n\n");
    return 0;
}
```

3.2 Output

```
2 8 7 9 1 5 3 4 6 2
```

4

4.1 Code

```c
#include <stdio.h>
int main()
{
    printf("\n\n\n");
    int a[10], i, n, s = 0;
    printf("Enter the no. of digits: ");
    scanf("%d", &n); //n digit number will be formed
    printf("Enter the digits one by one: \n");
    for (i = 0; i < n; i++)
    {
        scanf("%d", &a[i]);  //input the digits
        s = (s * 10) + a[i]; //add the digit to the number
    }
    printf("The number formed is: %d", s);
    printf("\n\n\n");
    return 0;
}
```

4.2 Output

```
Enter the no. of digits: 5
Enter the digits one by one:
1
3
4
0
2
The number formed is: 13402
```

5

5.1 Code

```c
#include <stdio.h>
int main()
{
    printf("\n\n\n");
    int a[10] = {2, 6, 4, 3, 5, 1, 9, 7, 8, 2}, large, large2, i, j, k, t;
    large = a[0], large2 = a[0];
    for (i = 0; i < 10; i++) //this loop determines the biggest number
    {
        if (a[i] > large)
        {
            large = a[i]; //if any number is greater than the present value of large, re
            k = i;
        }
    }
    for (i = 0; i < 10; i++)
    {
        if (a[i] > large2 && i != k) //finds the 2nd biggest number by excluding the bigg
            large2 = a[i];
    }
    printf("\n The 2nd biggest number is: %d", large2);
    printf("\n\n\n");
    return 0;
}
```

5.2 Output

```
The 2nd biggest number is: 8
```

6

6.1 Code

```
#include <stdio.h>
float mean(int a[], int n)
{
    int s = 0, i;
    for (i = 0; i < n; ++i)
        s += a[i];           //sum all the numbers in the array
    return (((float)s) / n); //return sum/n;
}
int mode(int a[], int n)
{
    int i, j, k, l = 0, m = 0;
    for (i = 1, k = 1; i < n; ++i)
    {
        if (a[i] == a[0])
            k++; //no. of times 1st element appears
    }
    m = 0;
    for (i = 0; i < n; ++i)
    {
        l = 1;
        for (j = 0; j < n; ++j)
        {
            if ((a[i] == a[j]) && (i != j))
                l++; //no. of times a[j] appears in the array
        }
        if (l > k)
            k = l, m = i; //if a[j] appears more times than a[k], replace a[k]
    }
    return a[m]; //returns mode (if any), if every number occurs once, returns first ele
}
int main()
{
    printf("\n\n\n");
    int n, a[100], s = 0, i;
    printf("How many numbers do you wish to enter? ");
    scanf("%d", &n); //how many numbers to enter
    for (i = 0; i < n; ++i)
    {
        printf(" Enter the number %d: ", i + 1);
        scanf("%d", &a[i]); //input the numbers in the array
    }
    printf("\n The mean of above numbers is: %f", mean(a, n));
    printf("\n The mode of above numbers is: %d", mode(a, n));
    printf("\n\n\n");
    return 0;
}
```

6.2 Output

```
How many numbers do you wish to enter? 5
 Enter the number 1: 10
 Enter the number 2: 16
 Enter the number 3: 13
 Enter the number 4: 16
 Enter the number 5: 15

 The mean of above numbers is: 14.000000
 The mode of above numbers is: 16
```

7

7.1 Code

```c
#include <stdio.h>
int main()
{
    printf("\n\n\n");
    int a[40], s = 0, i;
    printf("Rate the food: \n");
    for (i = 0; i < 40; ++i)
    {
        printf("Student %d: ", i + 1); //input every student feedback
        scanf("%d", &a[i]);
        if (a[i] <= 0)
            a[i] = 1; //if somebody has rated below 1, make it 1
        else if (a[i] > 10)
            a[i] = 10; //if somebody has rated above 10, make it 10
        s += a[i];     //sum the responses
    }
    printf("On an average, the food has the rating of: %d out of 10", s / 40); //print th
    printf("\n\n\n");
    return 0;
}
```

7.2 Output

```
Rate the food:
Student 1: 5
Student 2: 7
Student 3: 12
Student 4: 10
Student 5: 6
On an average, the food has the rating of: 7 out of 10
```

8

8.1 Code

```c
#include <stdio.h>
int isprime(int n) //function to check whether the number is prime or not
{
   int i, k = 0;
   for (i = 2; i < n; ++i)
   {
      if (n % i == 0)
         ++k; //if n is not divisible by any other number than 1 or itself k remains 0
   }
   if (k == 0)
      return 1; //return true if k==0 i.e.) n is not divisible by any other no.
   else
      return 0; //otherwise return false
}
int main()
{
   printf("\n\n\n");
   int a[100], i, j, k, n = 100;
   for (i = 0; i < n; ++i)
      a[i] = i + 1; //allot 1-100 to array
   printf("\n Before sorting: \n");
   for (i = 0; i < n; ++i)
      printf("%d  ", a[i]);
   printf("\n\n");
   for (i = 0; i < n; ++i)
   {
      if (isprime(a[i]))
      {
         for (j = i; j < n; ++j)
            a[j] = a[j + 1]; //if a[i] is prime replace the next element by the present
         n--;                //array size will be decreased by 1 after every one removal
      }
   }
   printf("\n After sorting: \n");
   for (i = 0; i < n; ++i)
      printf("%d \t", a[i]);
   printf("\n\n\n");
   return 0;
}
```

8.2 Output

```
 Before sorting:
1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30
31  32  33  34  35  36  37  38  39  40  41  42  43  44  45  46  47  48  49  50  51  52  53  54  55  56  57  58
 59  60  61  62  63  64  65  66  67  68  69  70  71  72  73  74  75  76  77  78  79  80  81  82  83  84  85  86
  87  88  89  90  91  92  93  94  95  96  97  98  99  100


 After sorting:
2       4       6       8       9       10      12      14      15      16      18      20      21      22    2
4       25      26      27      28      30      32      33      34      35      36      38      39      40    4
2       44      45      46      48      49      50      51      52      54      55      56      57      58    6
0       62      63      64      65      66      68      69      70      72      74      75      76      77    7
8       80      81      82      84      85      86      87      88      90      91      92      93      94    9
5       96      98      99      100
```

9

9.1 Code

```c
#include <stdio.h>
int main()
{
    printf("\n\n\n");
    int a[10] = {23, 12, 15, 18, 9, 10, 6, 45, 55, 25}, i, j = 0, b[10];
    for (i = 0; i < 10; i++)
    {
        if (a[i] % 9 == 0)
            b[j++] = a[i]; //if a[i] is divisible by 9 add it to arrab b
    }
    for (i = 0; i < j; i++)
    {
        printf("%d ", b[i]); //print the array b
    }
    printf("\n\n\n");
    return 0;
}
```

9.2 Output

```
18 9 45
```