

Solution Of Midterm Codes

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3 * c function to take a number and sum all digits? test case 1: (1

input:123 ->output:6

test case 2:

input:4565 ->output:20

```
test.c Midterm_ex1.c
1 //AOS
2 //EX1_Sum_digits //Mid term
3 #include <stdio.h>
4 #include <stdlib.h>
5 #include <string.h>
6
7 int sum_dig(char n[]);
8
9 int main(){
10     char n[100];
11     printf("Enter the number: ");
12     fflush(stdin); fflush(stdout);
13     gets(n); // take the number as string
14     printf("Sum Of Digits = %d",sum_dig(n));
15     return 0;
16 }
17 int sum_dig(char n[]){
18     int sum =0;
19     char t[1];
20     for(int i=0;i<strlen(n);i++){
21         t[0]=n[i]; // take each digit alone
22         sum += atoi(t); // convert the digit to integer
23     }
24     return sum ;
25 }
```

Test case : 1

<terminated> (exit value: 0) Midterm_ex1.exe [C/C++ Application] C:\Users\midom\workspace\C_Programming\Midterm_ex1

Enter the number: 123

Sum Of Digits = 6

Test case : 2 >>

<terminated> (exit value: 0) test.exe |

Enter the number: 4565

Sum Of Digits = 20

3 * c function to take an integer number and calculate it's square root?

(2


test case 1:

input:4 ->output:2.000

test case 2:

input:10 -

>output:3.126

إضافة ملف 

```
*test.c Midterm_ex1.c
1 //AOS
2 //EX2_Square_root //Mid term
3 #include <stdio.h>
4 #include <stdlib.h>
5 #include <string.h>
6
7 double sq_rt(double n);
8
9 int main(){
10     double n;
11     printf("Enter the number: ");
12     fflush(stdin); fflush(stdout);
13     scanf("%lf",&n);
14     printf("Square root of %.2lf = %.3lf\n",n,sq_rt(n));
15     return 0;
16 }
17 double sq_rt(double n){
18     double i,f;
19     for(i=0.0,f=0.0;i<n;i=i+0.00001){ //find the square root
20         if((i*i) >= n){
21             f=i;
22             break;}
23     }
24     return f;
25 }
```

Problems Tasks Console Properties Debugger Console

<terminated> (exit value: 0) test.exe [C/C++ Application] C:\Users\midom\workspace\C_Programming\test

Enter the number: 4 Enter the number: 10

Square root of 4.00 = 2.000 Square root of 10.00 = 3.162


Test case 1:


Test case 2:

* c function to print all prime numbers between two numbers? 3 نقاط

(3

test case :

input:n1=1,n2=20 ->output:1 2 3 5 7 11 13 17 19

إضافة ملف 

```
*test.c EX2_Square_root.c
1 //AOS
2 //EX3_Prime_NUM //Mid term
3 #include <stdio.h>
4 #include <stdlib.h>
5 #include <string.h>
6 void prime(int n1,int n2);
7 int main(){
8     int n1,n2;
9     printf("Enter the two numbers: ");
10    fflush(stdin); fflush(stdout);
11    scanf("%d %d",&n1 ,&n2);
12    prime(n1,n2);
13    return 0;
14 }
15 void prime(int n1,int n2){
16     int flag;
17     for(int i=n1;i<=n2;++i){        // loop to move between numbers
18         for(int j=2;j<=i/2;++j){    // loop to check this number is prime or not
19             if(i%j==0){
20                 flag =0;
21                 break;}
22             else flag =1 ;
23         }
24         if(flag == 1 || i == 1 || i == 2 || i == 3)printf("%d\t",i);
25     }
}

Problems Tasks Console Properties Debugger Console
<terminated> (exit value: 0) test.exe [C/C++ Application] C:\Users\midom\workspace\C_Programming\test\Debug\test.exe (4/5/
Enter the two numbers: 1
20
1      2      3      5      7      11      13      17      19
```


* 3 نقاط c function to revers digits in number?

test case 1:

(4

input:2457 ->output:7542 .

test case 2:

input:1057 ->output:7501

إضافة ملف

```
test.c EX2_Square_root.c EX3_Prime_NUM.c EX1_Sum_Digits.c
1 //AOS
2 //EX4_Reverse_Digits //Mid term
3 #include <stdio.h>
4 #include <stdlib.h>
5 #include <string.h>
6
7 int sum_dig(char n[]);
8
9 int main() {
10     char n[100];
11     printf("Enter the number: ");
12     fflush(stdin); fflush(stdout);
13     gets(n); // take the number as string
14     printf("Reverse Of Digits = %d",sum_dig(n));
15     return 0;
16 }
17 int sum_dig(char n[]){
18     char t[100];
19     for(int i=strlen(n)-1;i>=0;--i){
20         t[strlen(n)-i-1]=n[i]; // store the char reversely
21     }
22     return atoi(t) ; // Return the revered digits as an integer number by (atoi)
23 }
24
```

Problems Tasks Console Properties Debugger Console

<terminated> (exit value: 0) test.exe [C/C++ Application] C:\Users\midom\workspace\C_Programming\test\Debug\test.exe (4/5/23, 12:27)

Enter the number: 2457 Enter the number: 1057

Reverse Of Digits = 7542 Reverse Of Digits = 7501

Test case 1 :



Test case 2 :



test case 1:

input:5 ->output: 2 --->binary of 5 is 0101 so has 2 one's

test case 2:

input:15 ->output:4

إضافة ملف

```

1 //AOS
2 //EX5_binary_ones //Mid term
3 #include <stdio.h>
4 #include <stdlib.h>
5 #include <string.h>
6 void ch_ones(int n);
7 int main(){
8     int n;
9     printf("Enter the number: ");
10    fflush(stdin); fflush(stdout);
11    scanf("%d",&n);
12    ch_ones(n);
13    return 0;
14 }
15 void ch_ones(int n){
16     int ones=0;
17     for(int i=0; i<sizeof(n); i++)
18     {
19         // If LSB is set then increment ones
20         if(n & 1) ones++;
21         n >>= 1;
22         //Right shift bits of number to one position
23     }
24     printf("Number Of ones = %d",ones);
25 }

```

Problems Tasks Console Properties Debugger Console

<terminated> (exit value: 0) test.exe [C/C++ Application] C:\Users\midom\workspace\C_

Enter the number: 5
Number Of ones = 2

Enter the number: 15
Number Of ones = 4

Test case 1 : ↑

Test case 2 : ↑

3 نقاط * c function to return unique number in array with one loop?

(6

test case 1:

input: int a[7]={4,2,5,2,5,7,4};

output:7.

test case 2:

input: int a[3]={4,2,4}; output:2

إضافة ملف

```
*test.c EX2_Square_root.c EX3_Prime_NUM.c EX1_Sum_Digits.c EX4_Reverse_Digits.c
1 //AOS
2 //EX6_Unique_NUM //Mid term
3 #include <stdio.h>
4 #include <stdlib.h>
5 #include <string.h>
6 char unique_num(int a[],int size);
7 int main(){
8     int a[]={4,2,5,2,5,7,4},b[]={4,2,4};
9     printf("Unique number in array of a is: %d\n",unique_num(a,sizeof(a)));
10    printf("Unique number in array of b is: %d",unique_num(b,sizeof(b)));
11    return 0;
12 }
13 char unique_num(int a[],int size){
14     int uni=0 ,i;
15     size = size/sizeof(a[0]);
16     for(i=0;i<size;++i){
17         uni = uni^a[i];
18     }
19     return uni;
20 }
21
```

Problems Tasks Console Properties Debugger Console

<terminated> (exit value: 0) test.exe [C/C++ Application] C:\Users\midom\workspace\C_Programming\test\Debug\test.exe

Unique number in array of a is: 7

Unique number in array of b is: 2

test.c

```
1 //AOS
2 //EX7_Sum_NUM //Mid term
3 #include <stdio.h>
4 #include <stdlib.h>
5 #include <string.h>
6 int sum(int n1,int n2);
7 int main() {
8     int n1,n2;
9     printf("Enter the two numbers: ");
10    fflush(stdin); fflush(stdout);
11    scanf("%d %d",&n1 ,&n2);
12    printf("The sum of numbers from %d to %d = %d",n1,n2,sum(n1,n2));
13    return 0;
14 }
15 int sum(int n1,int n2) {
16     if(n1<=n2)
17         return n1+sum(n1+1,n2);
18     else
19         return 0;
20 }
21
```

Problems Tasks Console Properties Debugger Console

<terminated> (exit value: 0) test.exe [C/C++ Application] C:\Users\midom\workspace\C_Programming\test\Debug

Enter the two numbers: 1

100

The sum of numbers from 1 to 100 = 5050

3 * c function to take an array and revers its elements? test case 1: (8
input: int
a[5]={1,2,3,4,5}; output:5 4 3 2 1

إضافة ملف 

```
*test.c EX7_Sum_NUM.c
1 //AOS
2 //EX8_Reverse_NUM //Mid term
3 #include <stdio.h>
4 #include <stdlib.h>
5 #include <string.h>
6 void reverse(int a[],int size);
7 int main(){
8     int a[5]={1,2,3,4,5};
9     reverse(a,sizeof(a));
10    return 0;
11 }
12 void reverse(int a[],int size){
13     for(int i=(size/sizeof(a[0]))-1;i>=0;--i){
14         printf("%d\t",a[i]);
15     }
16 }
17 |
```

Problems Tasks Console Properties Debugger Console

<terminated> (exit value: 0) test.exe [C/C++ Application] C:\Users\midom\workspace\C

5 4 3 2 1

c function to reverse words in string?

test case :

(9

input: mohamed gamal. output: gamal mohamed

إضافة ملف 

test.c

```
1 //AOS
2 //EX9_Reverse_String //Mid term
3 #include <stdio.h>
4 #include <stdlib.h>
5 #include <string.h>
6 void rev_str(char a[]);
7 int main(){
8     char a[100];
9     printf("Enter the string: ");
10    fflush(stdout);
11    gets(a);
12    rev_str(a);
13    return 0;
14 }
15 void rev_str(char a[]){
16     int endname_index= strlen(a); // this variable store the end index of name
17     for(int i=strlen(a)-1;i>=0;--i){
18         if(a[i]==' '||i==0){
19             if(i==0)i-=1; // to take the first name that start from a[0]
20             for(int j=i+1;j<endname_index;++j){
21                 printf("%c",a[j]);
22             }
23             endname_index=i; // i is an index of space that will be an end index for name before it
24             printf(" ");
25         }
26     }
27 }
```

Problems Tasks Console Properties Debugger Console

<terminated> (exit value: 0) test.exe [C/C++ Application] C:\Users\midom\workspace\C_Programming\test\Debug\test.exe (4/5/23, 4:25 AM)

Enter the string: Ahmed Osamaa Mohamed

Mohamed Osamaa Ahmed

c function to count the max number of ones between two zeros?

(10

test case 1:


input:14(01110)

output:3

test case 2:

input:110(0110 1110).

output:3

إضافة ملف 


```
test.c EX9_Reverse_String.c EX5_binary_ones.c
1 //AOS
2 //EX10_Max_ones //Mid term
3 #include <stdio.h>
4 #include <stdlib.h>
5 #include <string.h>
6 void max_ones(int n);
7 int main(){
8     int n;
9     printf("Enter the number: ");
10    fflush(stdin); fflush(stdout);
11    scanf("%d",&n);
12    max_ones(n);
13    return 0;
14 }
15 void max_ones(int n){
16     int count=0,s=0,sn=0;
17     for(int i=0; i<sizeof(n)*8; i++) // size of integer =4 * 8 number of (bits in one byte)
18     { if(n & 1){ // If LSB is set then increment ones
19         ++count;
20         sn=count; //store number of series of one
21     }
22     else{count=0;} //reset count
23     if(sn>s)s=sn; // compare stored counter with new one
24     n >>= 1; //Right shift bits of number to one position
25 }
26 printf("Number Of max ones between two zeros = %d",s);
27 }
```

Problems Tasks Console Properties Debugger Console

<terminated> (exit value: 0) test.exe [C/C++ Application] C:\Users\midom\workspace\C_Programming\test\Debug\test.exe (4/5/23, 4:59 AM)

Enter the number: 14
Number Of max ones between two zeros = 3

Enter the number: 110
Number Of max ones between two zeros = 3

Test case 1: 

Test case 2: 