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SUBJECT: ADVANCED C PROGRAMMING

SLOT: L47+48

ASSESSMENT NO: 5

1. **Write a C program to get 10 VIT registration numbers and store only the first year students registration number into a file. Also, retrieve the second last registration number from a file.**

CODE:

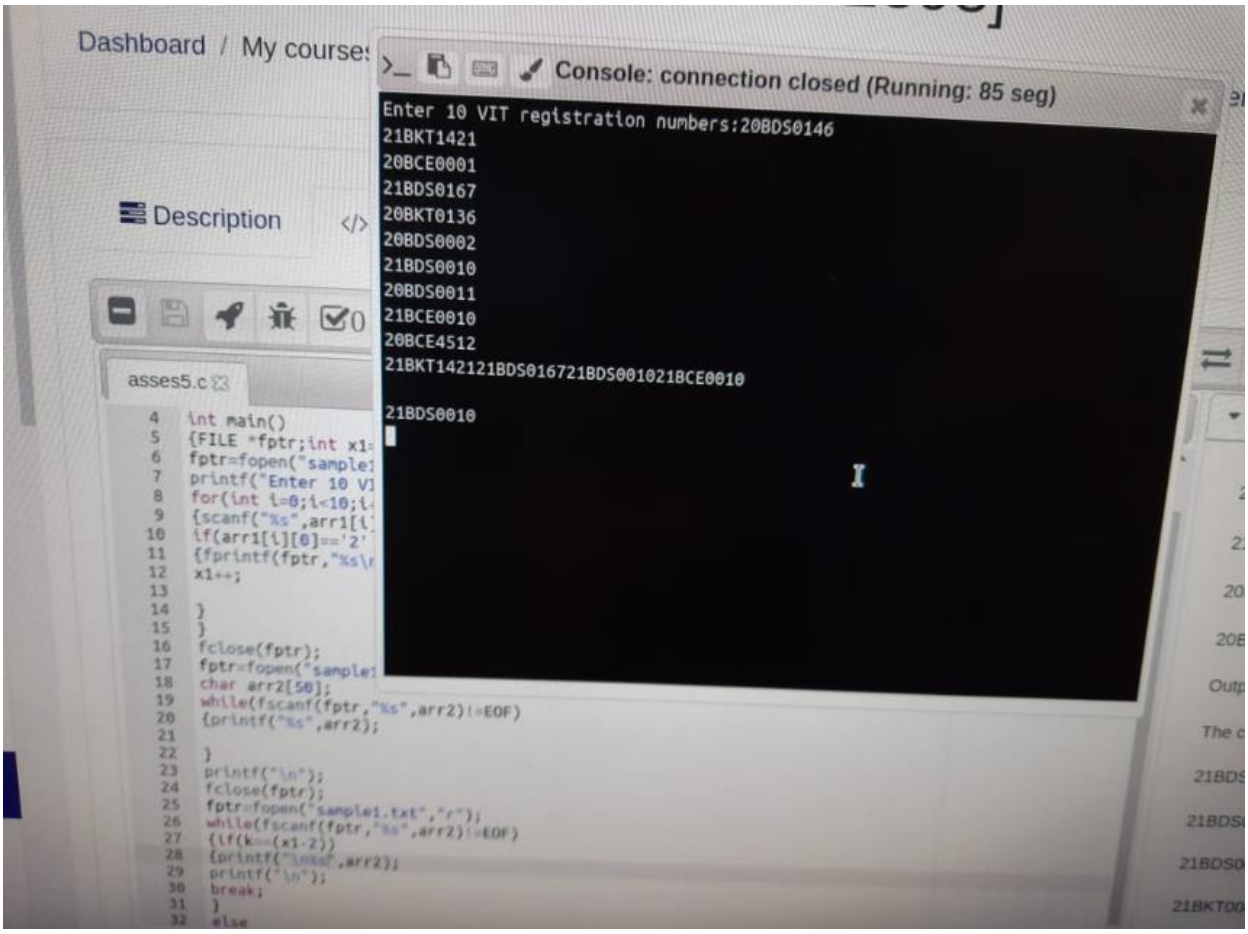
```
#include<stdio.h>
#include<stdlib.h>

int main()
{FILE *fptr;int x1=0; char arr1[20][20];int k=0;
fptr=fopen("sample1.txt","w");
printf("Enter 10 VIT registration numbers:");
for(int i=0;i<10;i++)
{scanf("%s",arr1[i]);
if(arr1[i][0]=='2' && arr1[i][1]=='1')
{fprintf(fptr,"%s\n",arr1[i]);
x1++;
```

```
}
}
fclose(fptr);
fptr=fopen("sample1.txt","r");
char arr2[50];
while(fscanf(fptr,"%s",arr2)!=EOF)
{printf("%s",arr2);

}
printf("\n");
fclose(fptr);
fptr=fopen("sample1.txt","r");
while(fscanf(fptr,"%s",arr2)!=EOF)
{if(k==(x1-2))
{printf("\n%s",arr2);
printf("\n");
break;
}
else
```

{k++;}}

return 0;}

OUTPUT:



2. Write a C Program to perform the following operations using Macro:

1) Write the single line macro to check non-zero value (use for division operation)

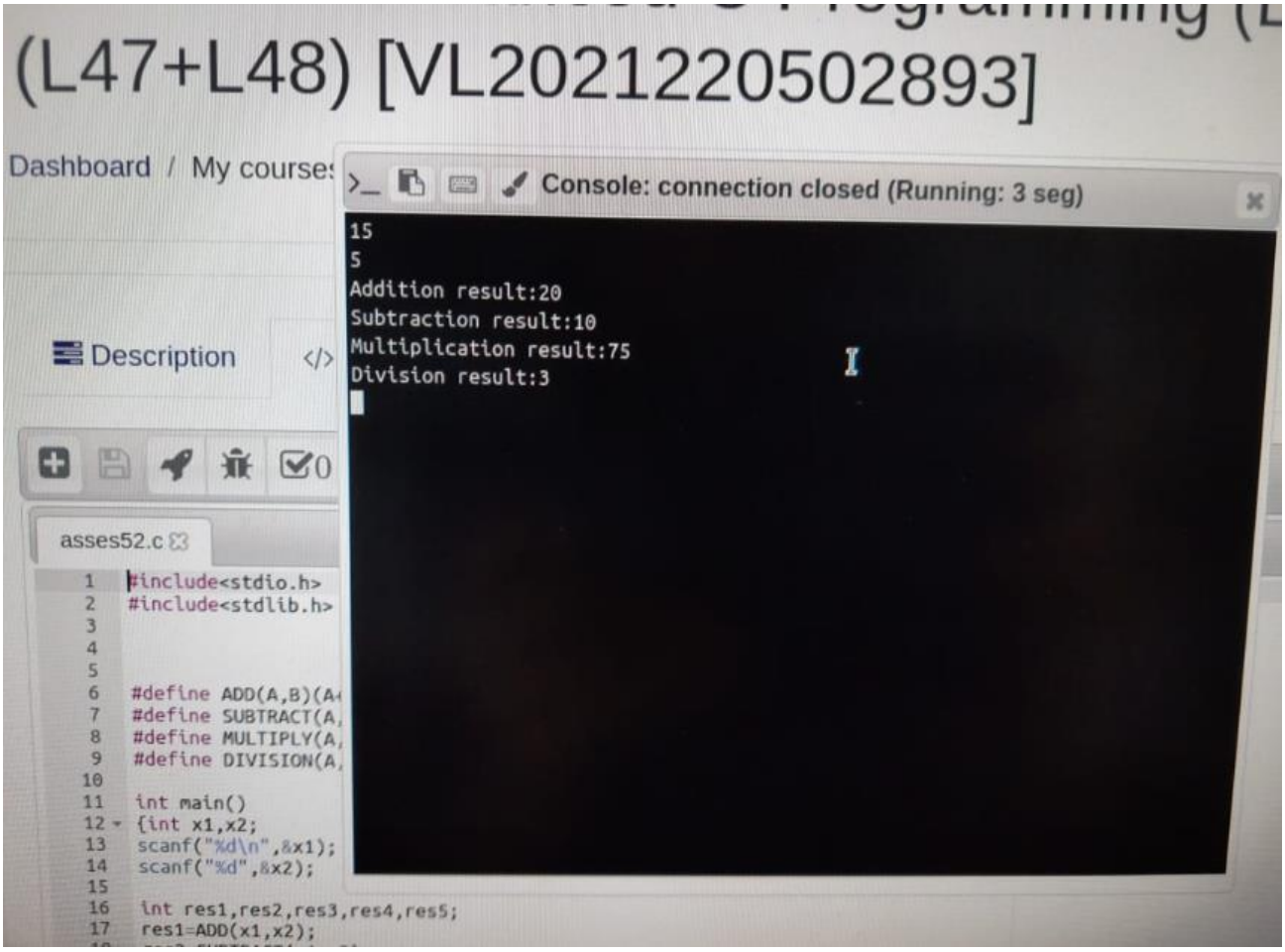
2) Perform basic arithmetic operations using a separate Macro definition

CODE:

```
#include<stdio.h>
#include<stdlib.h>

 #define ADD(A,B)(A+B)
#define SUBTRACT(A,B)(A-B)
#define MULTIPLY(A,B)(A*B)
#define DIVISION(A,B)((B)==0 ? 0: A/B)

int main()
{int x1,x2;
scanf("%d\n",&x1);
scanf("%d",&x2);

int res1,res2,res3,res4,res5;
res1=ADD(x1,x2);
```

```
res2=SUBTRACT(x1,x2);
res3=MULTIPLY(x1,x2);
res4=DIVISION(x1,x2);
printf("Addition result:%d",res1);printf("\n");
printf("Subtraction result:%d",res2);printf("\n");
printf("Multiplication result:%d",res3);printf("\n");
printf("Division result:%d",res4);printf("\n");
}
```

OUTPUT:


(L47+L48) [VL2021220502893]
Dashboard / My course
Description
Console: connection closed (Running: 3 seg)
15
5
Addition result:20
Subtraction result:10
Multiplication result:75
Division result:3
asses52.c
#include<stdio.h>
#include<stdlib.h>
#define ADD(A,B)(A
#define SUBTRACT(A,
#define MULTIPLY(A,
#define DIVISION(A,
int main()
{int x1,x2;
scanf("%d\n",&x1);
scanf("%d",&x2);
int res1,res2,res3,res4,res5;
res1=ADD(x1,x2);

3. Write a C Program to perform the following operations on strings as a separate functions.

1) To check whether a given string is palindrome or not.

Example 1: Input: MALAYALAM

Output: Palindrome

Example 2: Input: VIT

Output: Not a Palindrome

2) To count all possible substrings (not necessarily distinct) that have exactly k distinct characters.

Example 1: Input: "aba" K=2

Output: 3

```
The substrings are: "ab" ,"bc" and
"aba"
```

Example 2: Input: S = "abaaca", K = 1

```
Output: 7
  The substrings are:
  "a", "b", "a", "aa", "a", "c",
"a".
```

3) You are given two strings and of the same length . Your task is to convert the string into T by doing some operations. In an operation, you can delete the first character of the string and append any character at the end of the string. You are required to determine the minimum number of operations to

convert into .

Example 1: Input: S= "aaxaabc" T="aabcaax"

Output: 3

After the 1 s t operation S = a x a a b c a
After the 2 n d operation S = x a a b c a a
After the 3 r d operation S = a a b c a a x
After 3 r d operation S and T becomes same.

CODE:

```
#include<stdio.h>
#include<string.h>
#include<stdlib.h>

char *calc(char *s2,int pos2,int len2)
{char *c;
int j;
c=malloc(len2+1);
for(j=0;j<len2;j++)
```

```
{*(c+j)=*(s2+pos2-1);
   s2++;
}
*(c+j)='\0';
return c;
}

void palin(char *arr1)
{char arr2[100];int begin,end,count=0;
while(arr1[count]!='\0')
{count++;}
end=count-1;
for(begin=0;begin<count;begin++)
{arr2[begin]=arr1[end];
end--;}
arr2[begin]='\0';

if(strcmp(arr1,arr2)==0)
   {printf("palindrome\n");}
else
```

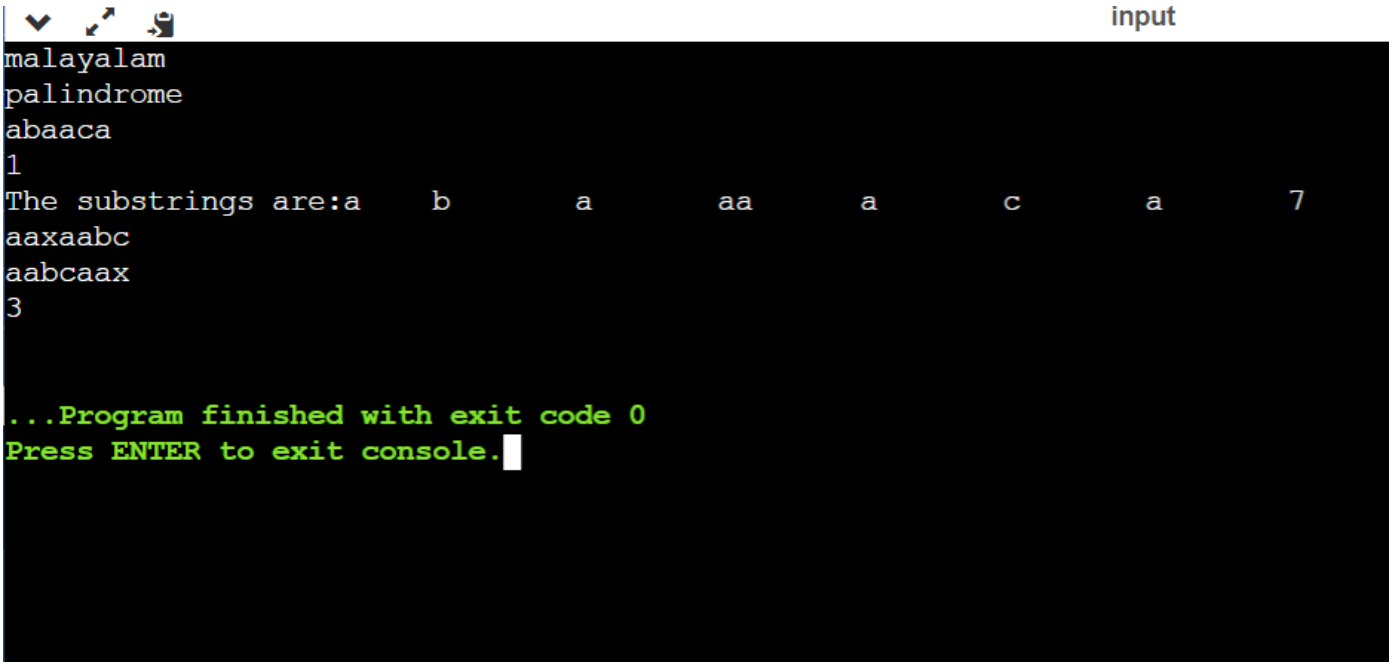
```
{printf("Not a palindrome\n");}
}
int di(char *s3)
{int tmp2[128]={0};
int k,c1=0;
for(k=0;k<strlen(s3);++k)
{tmp2[s3[k]]=1;}

for(k=0;k<128;k++)
{c1+=tmp2[k];
}
return c1;
}
void substr(char *s1,int k1)
{int pos=1;int length=1,x,len,count=0;
len=x=strlen(s1);char *p;
printf("The substrings are:");
while(pos<=len)
{while(length<=x)
{p=calc(s1,pos,length);
```

```
    int val=di(p);
    if(val==k1)
    {count+=1;
        printf("%s\t",p);
    }
    free(p);
    length++;
}
x--;
pos++;
length=1;}
    printf("%d\n",count);
}

void oper(char *a1,char *b1)
{int x1=strlen(a1);
int y1=strlen(b1);
if(x1!=y1)
{printf("Conversion not possible");}
int cou[300];
```

```
memset(cou,0,sizeof(cou));
for(int i=0;i<y1;i++)
{cou[b1[i]]++;}
for(int i=0;i<y1;i++)
{cou[a1[i]]--;}
for(int i=0;i<256;i++)
{if(cou[i])
   {printf("Conversion not possible");}
}
int z1=0;
for(int i=y1-1,j=y1-1;i>=0;)
{while(i>=0 && a1[i]!=b1[j])
{i--;
z1++;
}
if(i>=0)
{i--;
j--;
}
}
```

```
printf("%d\n",z1-1);
}

int main()
{char arr[100],s[100],a[100],b[100];int k;
scanf("%s",arr);
palin(arr);
scanf("%s",s);
scanf("%d",&k);
substr(s,k);
scanf("%s\n",a);
scanf("%s",b);
oper(a,b);
return 0;

}
```

OUTPUT:



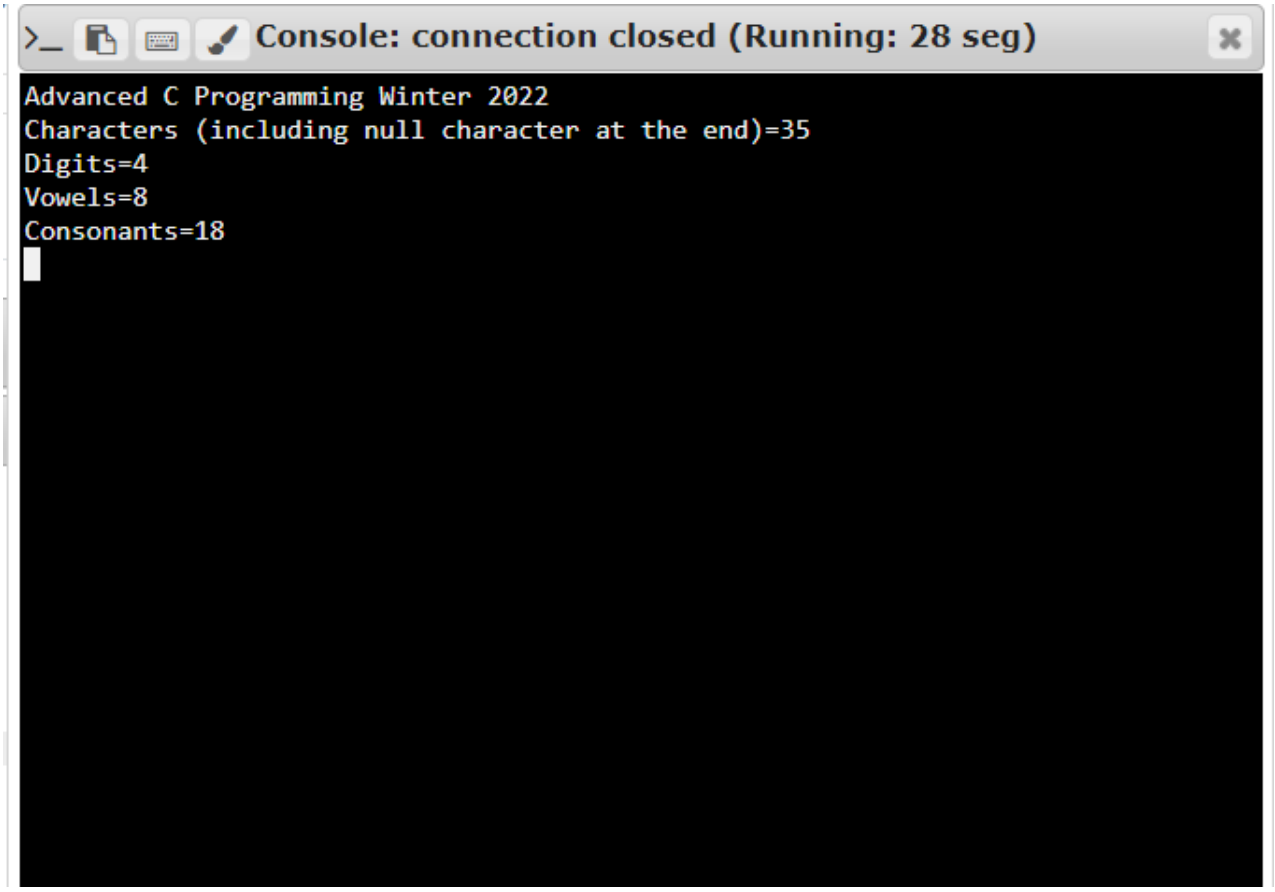
4. Write a C program to count total number of alphabets, digits or special characters, vowels and consonants in a string.

CODE:

```
#include<stdio.h>
#include<string.h>
#include<stdlib.h>
int main()
{
char str[100];
int v,c,d,s,i;
v=c=d=s=i=0;
```

```
fgets(str,sizeof str,stdin);
while(str[i]!='\0')
{
str[i]=tolower(str[i]);
if(str[i]=='a' || str[i]=='e' || str[i]=='i' || str[i]=='o' || str[i]=='u')
{++v;}
else if(str[i]>='a' && str[i]<='z')
{++c;}
else if(str[i]>='0' && str[i]<='9')
{++d;}

i++;
}
printf("Characters (including null character at the
end)=%d\n",i);
printf("Digits=%d\n",d);
printf("Vowels=%d\n",v);
printf("Consonants=%d\n",c);}
```

OUTPUT:


Console: connection closed (Running: 28 seg)
Advanced C Programming Winter 2022
Characters (including null character at the end)=35
Digits=4
Vowels=8
Consonants=18