

SSN COLLEGE OF ENGINEERING (Autonomous)

Affiliated to Anna University

DEPARTMENT OF CSE

UCS 1211 PROGRAMMING IN C LABORATORY

## Assignment 3

### Array handling in C

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1. The number 138 is called well ordered because the digits in the number (1,3,8) increase from left to right. ( $1 < 3 < 8$ ). The number 365 is not well ordered. Write a program that will find and display all possible three digit well-ordered numbers. Also display the total number of three digit well-ordered numbers. Make use of Arrays.

```
#include <stdio.h>
void main()
{
    int i,j,k,u=0,counter=0,a;
    int arr[1000];
    for(i=1;i<=9;i++)
    {
        for(j=0;j<=9;j++)
        {
            for(k=0;k<=9;k++)
```

```

        {
            if(k>j&& j>i)
            {
                a=i*100+j*10+k;

                arr[u]=a;

                u++;

                counter++;

            }

        }

    }

printf("The numbers are:");

for(i=0;i<counter;i++)

{
    printf("%d",arr[i]);

    printf(" ");

}

printf("the number of numbers are %d",counter);

}

```

## Output:

cseb131@jtl-29:~\$ ./wellorder

The numbers are:123 124 125 126 127 128 129 134 135 136 137 138 139 145 146 147 148  
149 156 157 158 159 167 168 169 178 179 189 234 235 236 237 238 239 245 246 247 248  
249 256 257 258 259 267 268 269 278 279 289 345 346 347 348 349 356 357 358 359 367  
368 369 378 379 389 456 457 458 459 467 468 469 478 479 489 567 568 569 578 579 589  
678 679 689 789 the number of numbers are 84

2. Write a program that accepts a set of digits (0 to 9) as input and prints a vertical histogram representing the occurrences of each digit. Test your program with the set of 13 digits: 1, 7, 2, 9, 6, 7, 1, 3, 7, 5, 7, 9, 0

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

```
void main()
```

```
{ int i,j,n,max=0;
```

```
    printf("Enter number of numbers");
```

```
    scanf("%d",&n);
```

```
    int a[n];
```

```
    int b[10];
```

```
    for(i=0;i<10;i++)
```

```
        b[i]=0;
```

```
    printf("Enter");
```

```
    for(i=0;i<n;i++)
```

```
        scanf("%d",&a[i]);
```

```
    for(i=0;i<n;i++)
```

```
        if(a[i]==1)
```

```
            b[1]++;
```

```
    for(i=0;i<n;i++)
```

```
        if(a[i]==2)
```

```
            b[2]++;
```

```
    for(i=0;i<n;i++)
```

```
        if(a[i]==3)
```

```

        b[3]++;
for(i=0;i<n;i++)
    if(a[i]==4)
        b[4]++;
for(i=0;i<n;i++)
    if(a[i]==5)
        b[5]++;
for(i=0;i<n;i++)
    if(a[i]==6)
        b[6]++;
for(i=0;i<n;i++)
    if(a[i]==7)
        b[7]++;
for(i=0;i<n;i++)
    if(a[i]==8)
        b[8]++;
for(i=0;i<n;i++)
    if(a[i]==9)
        b[9]++;
for(i=0;i<n;i++)
    if(a[i]==0)
        b[0]++;
for(i=0;i<10;i++)
    if(b[i]>max)
        max=b[i];
printf("%d",max);
for(i=max;i>0;i--)
    { printf("\n");
      for(j=0;j<10;j++)
          if(b[j]>=i)
              printf("*");
    }

```

```
        else
            printf(" ");
    }

}
```

## Output:

cseb131@jtl-29:~\$ ./histogram

Enter number of numbers:10

Enter:1

2

2

3

4

4

5

5

5

1

3

\*

\*\* \*\*

\*\*\*\*\*

3. Given an array of integers, push all the zero's of a given array to the end of the array. Write a program in C that implements the function `pushZerosToEnd(int arr[], int n)`.

```
#include <stdio.h>

void main()
{   int i;
    int x[20],n;
    printf("Enter the number of elements ");
    scanf("%d",&n);
    printf("Enter\n");
    for(i=0;i<n;i++)
        scanf("%d",&x[i]);
    pushzero(x,n);
    for(i=0;i<n;i++)
        printf("%d,",x[i]);
}

void pushzero(int a[],int n)
{   int k=0;
    for(int i=0;i<n;i++)
        if(a[i] !=0)
            a[k++]=a[i];
    while(k<n)
        a[k++]=0;
}
```

## Output:

```
cseb131@jtl-29:~$ ./pushzero
Enter the number of elements 4
Enter
3
0
0
4
3,4,0,0,
```

4. Implement the Example 9.14 program for piglatin generator given in the Text book (Byron Gottfried) . Modify it so that it can accommodate punctuation marks, uppercase letters and double-letter sounds.

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

void main()
{
    char a[100],c,d[100];
    int i=0,j,n,m=0,p=0;
    printf("Enter string: ");
    c = getchar();
    while(c!='\n')
    {
        a[i]=c;
        i++;
        c=getchar();
    }
    a[i]='\0';
    n=i;
    for(j=0;j<n;j++)
    {
        char b[20];
        int k=0;
        while(a[j]!=' '&&a[j]!='\0')
        {
            b[k] = a[j];
            k++;
            j++;
        }
        b[k]='\0';
        for(k=1;b[k]!='\0';k++)
        {
            d[p]=b[k];
            p++;
        }
        d[p]=b[0];
        p++;
        d[p]='a';
        p++;
        d[p]=' ';
```

```
        p++;
    }
    d[p]='\0';
    printf("translated: ");
    for(i=0;d[i]!='\0';i++)
    {
        printf("%c",d[i]);
    }
}
```

## Output:

cseb131@jtl-29:~\$ ./piglatin

Enter string: i am from ssn

translated: ia maa romfa snsna



5. Implement the children's hand game Rock-paper-scissors: Rock Paper Scissors is a two player game. Each player chooses one of rock, paper or scissors, without knowing the other player's choice

```
#include<stdio.h>

#include<stdlib.h>

void main()
{
    int a[3]={1,2,3},score1=0,score2=0,i,y;
    for(i=0;i<10;i++)
    {
        int x;
        printf("choose option:\n 1.Rock \n 2.Paper \n 3.Scissors \n");
        scanf("%d",&x);
        y=rand()%3;
        if(a[y]==x)
            printf("Draw\n");
        else if((a[y]==1&&x==2) || (a[y]==2&&x==3) || (a[y]==3&&x==1))
            {printf("Win\n");
            score1+=1;}
        else
            {printf("Lose\n");
            score2+=1;
            }
    }
    printf("\n Overall score: \n");
    printf("You: %d ",score1);
    printf("Computer: %d ",score2);
    if(score1>score2)
        printf("Win");
}
```

```
    else if(score1<score2)
        printf("Lose");
    else
        printf("Draw");
}
```

## Output:

cseb131@jtl-29:~\$ ./rock

choose option:

1.Rock

2.Paper

3.Scissors

2

Draw

choose option:

1.Rock

2.Paper

3.Scissors

3

Win

choose option:

1.Rock

2.Paper

3.Scissors

3

Lose

choose option:

1.Rock

2.Paper

3.Scissors

2

Draw

choose option:

1.Rock

2.Paper

3.Scissors

1

Win

choose option:

1.Rock

2.Paper

3.Scissors

1

Lose

choose option:

1.Rock

2.Paper

3.Scissors

2

Draw

choose option:

1.Rock

2.Paper

3.Scissors

1

Draw

choose option:

1.Rock

2.Paper

3.Scissors

3

Lose

choose option:

1.Rock

2.Paper

3.Scissors

1

Lose

Overall score:

You: 2 Computer: 4 Lose