ARRAYS

Exercises:

1) 8 12 10 3 2

2)
```
int a[]={5, 3, -9, -4, 7, -8};
for(int j=0; j<6; j++)
    if(a[j]<0)
        printf("%d ", a[j]);
```

3)
```
int a[]={5, 3, -9, -4, 7, -8};
printf("Positive numbers : ");
for(int j=0; j<6; j++)
    if(a[j]>0)
        printf("%d ", a[j]);
printf("\nNegative numbers : ");
for(int j=0; j<6; j++)
    if(a[j]<0)
        printf("%d ", a[j]);
```

4)
```
int a[]={5, 3, -9, -4, 7, -8}, b[6], c, n=0, i, j;
for(i=0; i<6; i++)
{
```

```
        c=0;
        for(j=1; j<=a[i]; j++)
                if(a[i]%j==0)
                        c++;
        if(c==2)
                b[n++]=a[i];
    }
    printf("\nList of numbers : ");
    for(j=0; j<n; j++)
        printf("%d ", b[j]);
```

5)
```
    int a[]={5, 3, -9, -4, 7, -8}, i, c;
    for(i=0; i<(6/2); i++)
    {
        c=a[i];
        a[i]=a[5-i];
        a[5-i]=c;
    }
    printf("\nReversed array : ");
    for(i=0; i<6; i++)
        printf("%d ", a[i]);
```

6)
```
    int r[]={101, 102, 103, 104, 105};
    int p[]={90, 95, 83, 72, 84}, i, rno, f=0;
    printf("Enter roll number : ");
    scanf("%d", &rno);
    for(i=0; i<5; i++)
    {
        if(rno==r[i])
```

```
        {
            f=1;
            printf("Percentage = %d", p[i]);
            break;
        }
    }
    if(f==0)
        printf("Choice does not exist!");
```

7)
```
    int a[]={5, 2, 1, 3, 4}, i, j;
    for(i=0; i<5; i++)
        printf("%d ", a[i]);
    printf("\n");
    for(i=3; i>=0; i--)
    {
        for(j=0; j<=i; j++)
        {
            a[j]=a[j]+a[j+1];
            printf("%d ", a[j]);
        }
        printf("\n");
    }
```

8)
```
    int n, a[6]={1, 3, 5, 8, 9}, i, j;
    printf("Enter number to input : ");
    scanf("%d", &n);
    if(n>a[4])
        a[5]=n;
    else if(n<a[0])
```

```
{
    for(i=4; i>=0; i--)
        a[i+1]=a[i];
    a[0]=n;
}
else
{
    for(i=0; i<4; i++)
        if(a[i]<n && a[i+1]>=n)
            break;
    for(j=4; j>=(i+1); j--)
        a[j+1]=a[j];
    a[j+1]=n;
}
for(i=0; i<6; i++)
    printf("%d ", a[i]);
```

9)
```
int n, a[6]={1, 3, 5, 8, 9}, i, j, pos, ind;
printf("Enter position to delete from : ");
scanf("%d", &pos);
ind=pos-1;
if(ind<0 || ind>4)
    printf("Array position out of bound!");
else
{
    if(ind==4)
        ;
    else if(ind==0)
        for(i=1; i<=4; i++)
            a[i-1]=a[i];
```

```
    else
        for(i=ind; i<=4; i++)
            a[i]=a[i+1];
    for(i=0; i<4; i++)
        printf("%d ", a[i]);
}
```

10)

```
int a[]={1, 2, 3, 5, 9}, ch, low=0, up=4, mid;
printf("Enter choice to search for : ");
scanf("%d", &ch);
while(low<=up)
{
    mid=(low+up)/2;
    if(ch == a[mid])
    {
        printf("Choice found at position %d", mid+1);
        break;
    }
    if(ch > a[mid])
        low=mid+1;
    if(ch < a[mid])
        up=mid-1;
}
if (low>up)
    printf("Choice not found!");
```

11) Bubble sort

```
int i, j, c, a[6]={5, 3, 9, 1, 2, 6};
```

```
for(i=5; i>=1; i--)
{
    for(j=0; j<i; j++)
        if(a[j] < a[j+1])
        {
            c = a[j];
            a[j] = a[j+1];
            a[j+1] = c;
        }
}
for(i=0; i<6; i++)
    printf("%d ", a[i]);
```

Selection sort

```
int i, j, c, a[6]={5, 3, 9, 1, 2, 6};
for(i=0; i<5; i++)
{
    for(j=i+1; j<6; j++)
        if(a[i] < a[j])
        {
            c = a[i];
            a[i] = a[j];
            a[j] = c;
        }
}
for(i=0; i<6; i++)
    printf("%d ", a[i]);
```

Insertion Sort

```
int i, j, c, k, a[6]={5, 3, 9, 1, 2, 6};
for(i=1; i<=5; i++)
{
    for(j=0; j<i; j++)
        if(a[j] < a[i])
        {
            c = a[j];
            a[j] = a[i];
            for(k=i; k>j; k--)
                a[k] = a[k-1];
            a[k+1] = c;
        }
}
for(i=0; i<6; i++)
    printf("%d ", a[i]);
```

12)

```
int i, j, c, a[6]={588, 32, 789, 1028, 270, 6}, b[6], n=0;
for(i=0; i<=5; i++)
{
    if(a[i]>=100 && a[i]<=999)
        b[n++]=a[i];
}
for(i=n-1; i>=1; i--)
{
    for(j=0; j<i; j++)
        if(b[j] < b[j+1])
        {
            c = b[j];
            b[j] = b[j+1];
            b[j+1] = c;
```

```
                }
        }
        for(i=0; i<n; i++)
                printf("%d ", b[i]);
```

13)
```
        int i, j, c, r[]={101, 102, 103, 104, 105};
        int s[5], p[]={90, 80, 95, 83, 97}, q[5];
        for(i=0; i<5; i++)
                q[i]=p[i];
        for(i=4; i>=1; i--)
        {
                for(j=0; j<i; j++)
                        if(q[j] < q[j+1])
                        {
                                c = q[j];
                                q[j] = q[j+1];
                                q[j+1] = c;
                        }
        }
        for(i=0; i<5; i++)
                for(j=0; j<5; j++)
                        if(q[i]==p[j])
                        {
                                s[i]=r[j];
                                break;
                        }
        printf("Roll Number \t Percentage\n");
        for(i=0; i<5; i++)
                printf("%d \t\t %d\n", q[i], s[i]);
```

14)
```
int i, j, c, r[10], s[3], p[10], q[10];
printf("Enter 10 roll numbers : ");
for(i=0; i<10; i++)
        scanf("%d", &r[i]);
printf("Enter corresponding percentages : ");
for(i=0; i<10; i++)
        scanf("%d", &p[i]);
for(i=0; i<10; i++)
        q[i]=p[i];
for(i=0; i<3; i++)
{
        for(j=i+1; j<10; j++)
                if(q[i] < q[j])
                {
                        c = q[i];
                        q[i] = q[j];
                        q[j] = c;
                }
}

for(i=0; i<3; i++)
        for(j=0; j<10; j++)
                if(q[i]==p[j])
                {
                        s[i]=r[j];
                        break;
                }

printf("Top three students are : \n");
for(i=0; i<3; i++)
```

```
        printf("%d \n", s[i]);
```

15)
```
int L1[]={5, 9, 10, 11, 13}, L2[]={1, 3, 5, 8, 9};
int i, j, ni=0, nu=0, L3[10], L4[10], c;

//Intersection
for(i=0; i<5; i++)
        for(j=0; j<5; j++)
                if(L1[i]==L2[j])
                        L4[ni++]=L1[i];

//Union
c=L4[0];
for(i=0; i<ni; i++)
        for(j=0; j<5; j++)
                if(L2[j]==L4[i])
                        L2[j]=c;

for(i=0; i<5; i++)
        L3[i]=L1[i];

for(nu=i, j=0; j<5; j++)
        if(L2[j]!=c)
                L3[nu++]=L2[j];

//Printing the results
printf("L1 ∪ L2 : ");
for(j=0; j<nu; j++)
        printf("%d ", L3[j]);
```

```
        printf("\nL1 ∩ L2 : ");
            for(i=0; i<ni; i++)
                printf("%d ", L4[i]);
```

Aptitude Questions:

1) 20 10 0

2) 65, A
   66, B
   67, C
   68, D
   69, E
   70, F

3) Varies from one compiler to another. In latest online compilers say www.onlinegdb.com it takes 5 numbers as input. In Turbo compiler it leads to an error stating 'Constant expression required'.

4) 3 2 15

5) Garbage 1 2 3 4

6) Garbage 0 1 2 3