1a)


```
Start

=1   ≤ 9   ++

j= +1  j ≤ 9  j++

k=j+1  k ≤ 9  k++

100* + 10*j + k

k

j

End
```
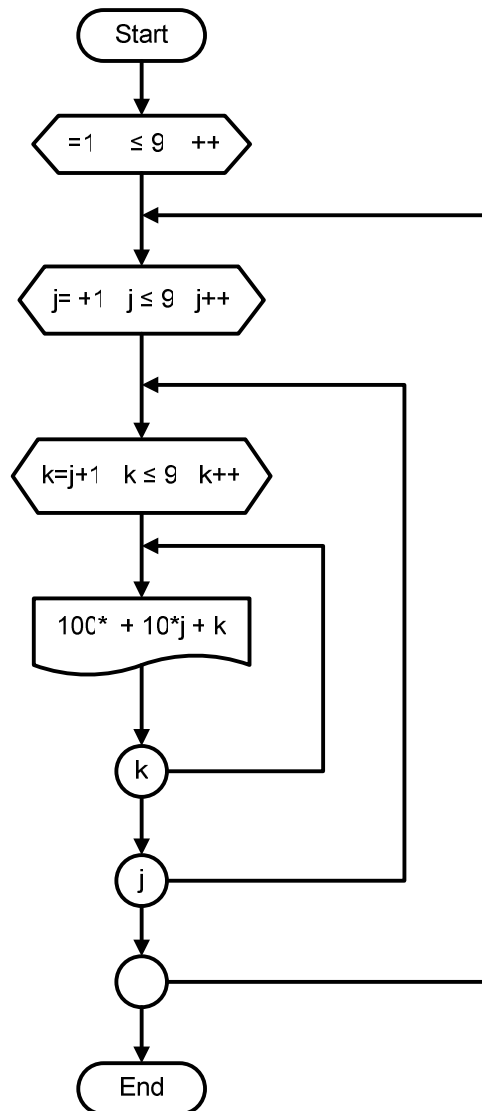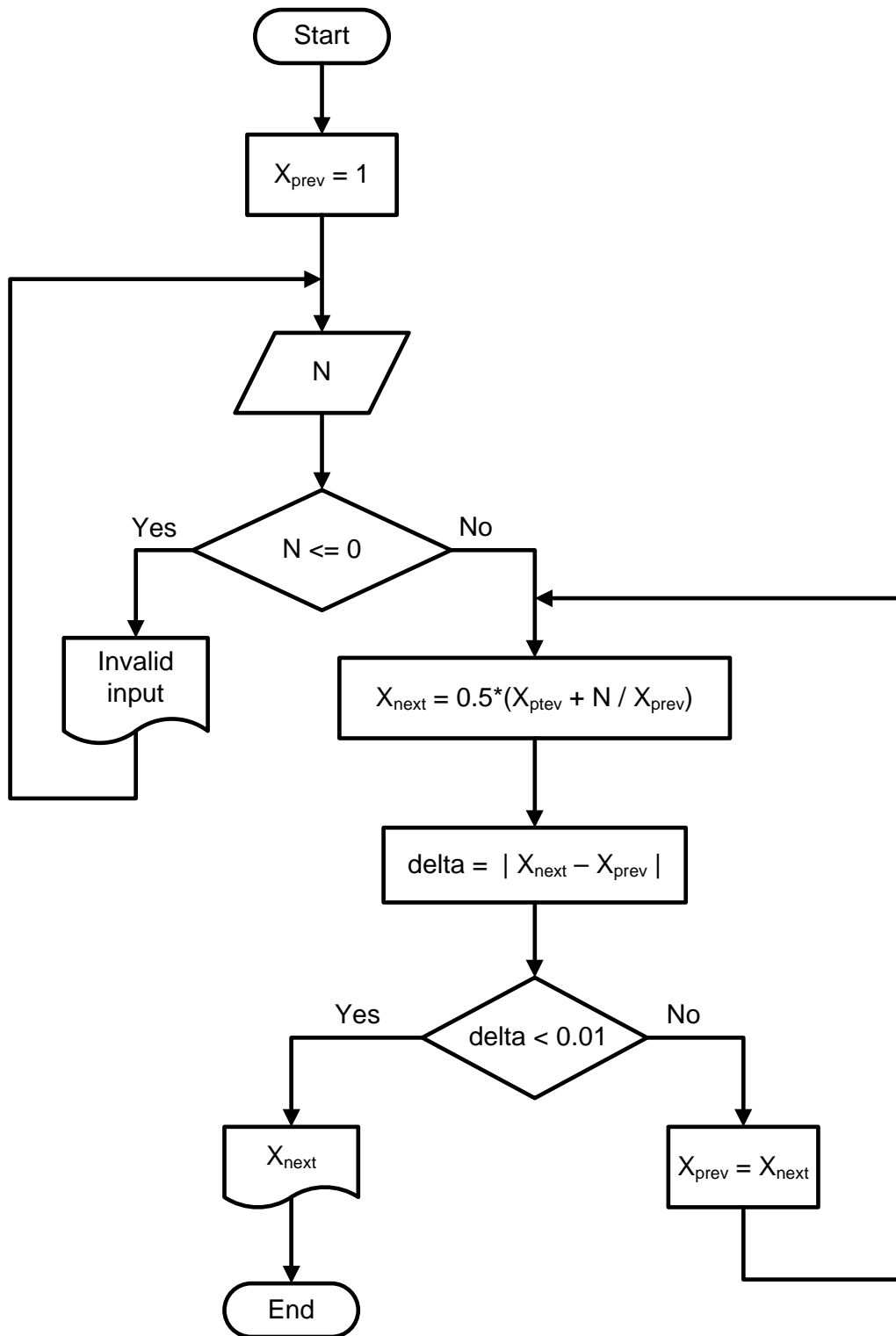
1b)

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

int main()
{
int i,j,k;

for (i=1; i <= 9; i++)
    for (j=i+1; j <= 9; j++)
        for (k=j+1; k <= 9; k++)
            printf("%4d ", 100*i + 10*j + k);

system("PAUSE");
return 0;
}
```

2a)

```
                    ┌─────────┐
                    │  Start  │
                    └─────────┘
                         │
                         ▼
                  ┌──────────────┐
                  │  Xprev = 1   │
                  └──────────────┘
                         │
           ┌─────────────┤
           │             ▼
           │          ╱─────╲
           │         ╱   N   ╲
           │         ╲       ╱
           │          ╲─────╱
           │             │
           │             ▼
           │         ╱───────╲
      Yes  │        ╱         ╲   No
      ◄────┼───────   N <= 0   ──────┐
           │        ╲         ╱      │
           │         ╲───────╱       │
           ▼                         ▼
      ┌─────────┐          ┌────────────────────────────────┐
      │ Invalid │          │ Xnext = 0.5*(Xptev + N / Xprev) │
      │  input  │          └────────────────────────────────┘
      └─────────┘                    │
                                     ▼
                          ┌────────────────────────┐
                          │ delta = | Xnext − Xprev |│
                          └────────────────────────┘
                                     │
                                     ▼
                                ╱─────────╲
                         Yes   ╱           ╲   No
                        ◄──────  delta < 0.01 ──────┐
                               ╲           ╱        │
                                ╲─────────╱         │
                         ▼                          ▼
                   ┌─────────┐              ┌──────────────┐
                   │  Xnext  │              │ Xprev = Xnext│
                   └─────────┘              └──────────────┘
                         │
                         ▼
                   ┌─────────┐
                   │   End   │
                   └─────────┘
```

- $X_{prev} = 1$
- N
- $N <= 0$
- Invalid input
- $X_{next} = 0.5 \cdot (X_{ptev} + N / X_{prev})$
- $delta = |\, X_{next} - X_{prev}\,|$
- $delta < 0.01$
- X_{next}
- $X_{prev} = X_{next}$

2b)

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

int main() {
float XPrev = 1, XNext, delta;
int N;

Tekrar:
printf("Enter positive N : ");
scanf("%d", &N);
```

```
if (N <= 0)
{
   printf("Invalid input, enter again\n");
   goto Tekrar;
}

while (1) /* infinite loop */
{
  XNext = 0.5*(XPrev + N / XPrev);
  delta = fabs(XNext - XPrev);

  if (delta < 0.01)
     break;

  XPrev = XNext;
}

printf("Square Root = %.2f\n", XNext);

system("PAUSE");
return 0;
}
```

3)

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

int main() {
int N, i, j;
int a[100][100]; /* Matrix for Pascal Triangle */

printf("Enter number of rows : ");
scanf("%d", &N);

/* Build the Pascal Triangle */
for (i=0; i < N; i++)
{
   for (j=0; j <= i; j++)
   {
      if (j == 0 || j == i)
          a[i][j] = 1;
      else
          a[i][j] = a[i-1][j-1] + a[i-1][j];

      printf("%4d ", a[i][j]);
   }
   printf("\n");
}
system("PAUSE");
return 0;
}
```

4)

```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#define TRUE 1
#define FALSE 0

int main()
{
      FILE * fGiris; /* Input file pointer */
      FILE * fCikis; /* Output file pointer */

      char  Ad[10], Soyad[10];
      char  Ad_Dizi[200][10], Soyad_Dizi[200][10];

      int sayac=0;
      int bulundu, i;

      fGiris = fopen("input.txt", "r");

      if (fGiris == NULL) {
         printf("Giris dosyasi acilamadi..\n");
         return -1;
      }

      while (! feof (fGiris) )   /* Checking whether end of file */
      {
              fscanf(fGiris, "%s %s", Ad, Soyad);

              bulundu = FALSE;
              for (i=0; i < sayac; i++)
              {
                  if (strcmp(Ad_Dizi[i], Ad)== 0 &&
                      strcmp(Soyad_Dizi[i], Soyad)== 0)
                  {
                     bulundu = TRUE;
                     break;
                  }
              }

              if (bulundu == FALSE)
              {
                 strcpy(Ad_Dizi[sayac], Ad);
                 strcpy(Soyad_Dizi[sayac], Soyad);
                 sayac++;
              }
      }
      fclose(fGiris);

      fCikis = fopen("output.txt", "w");
      for (i=0; i < sayac; i++)
          fprintf(fCikis, "%s %s\n", Ad_Dizi[i], Soyad_Dizi[i]);

      fclose(fCikis);
      system("pause");
      return 0;
}
```