```
/***
                                                                                        E:
 * Sum using for loop
                                                                                                         limit := @parameter0
                                                                                        X: limit
 * @param limit: Limit to sum until
 * @return Sum until limit
public static int sum_for(int limit){
                                                                                        E: limit
   int total = 0;
                                                                                                               total = 0
                                                                                        X: total, limit
    for(int i=1; i<=limit; i++) {</pre>
       total += i;
    return total;
                                                                                        E: total, limit
}
                                                                                                                 i = 1
                                                                                        X: total, i, limit
public static int sum_for(int)
                                                                                        E: total, i, limit
                                                                                                              label1: nop
                                                                                        X: total, i, limit
     int limit, total, i, temp$0, temp$1, temp$2,
temp$3;
     limit := @parameter0: int;
                                                                             E: total, i, limit
                                                                                               if i <= limit goto label2
                                                                             X: total, i, limit
     total = 0;
     i = 1;
                                                                                                                     E: total, i, limit
                                                                         E: total
                                                                                   goto label3
                                                                                                     label2: nop
 label1:
                                                                                                                     X: total, i, limit
                                                                         X: total
     nop;
     if i <= limit goto label2;</pre>
                                                                    E: total
                                                                                                                       E: limit, i. total
                                                                                 label3: nop
                                                                                                    temp\$0 = total
     goto label3;
                                                                    X: total
                                                                                                                       X: limit, temp$0, i
 label2:
     nop;
                                                                    E: total
                                                                                                                         E: Ilmit, temp$0, i
                                                                                                 temp$1 = temp$0 + i
                                                                                return total
     temp$0 = total;
                                                                    X:
                                                                                                                         X: Imit, I, temp$1
     temp$1 = temp$0 + i;
     total = temp$1;
                                                                                  E: limit, I, temp$1
                                                                                                    total = temp$1
                                                                                  X: total, limit, i
     nop;
     temp$2 = i;
                                                                                        E: total, limit, i
                                                                                                         nop
     temp$3 = temp$2 + 1;
                                                                                        X: total, limit, i
     i = temp$3;
     goto label1;
                                                                               E: total, limit, i
                                                                                                      temp$2 = i
                                                                               X: total, limit, temp$2
 label3:
     nop;
                                                                           E: total, limit, temp$2
     return total;
                                                                                                temp$3 = temp$2 + 1
                                                                           X: total, limit, temp$3
}
                                                                                    E: total, limit, temp$3
                                                                                                        i = temp$3
                                                                                    X: total, i, limit
                                                                                               E: total, i, limit
                                                                                                              goto label1
```

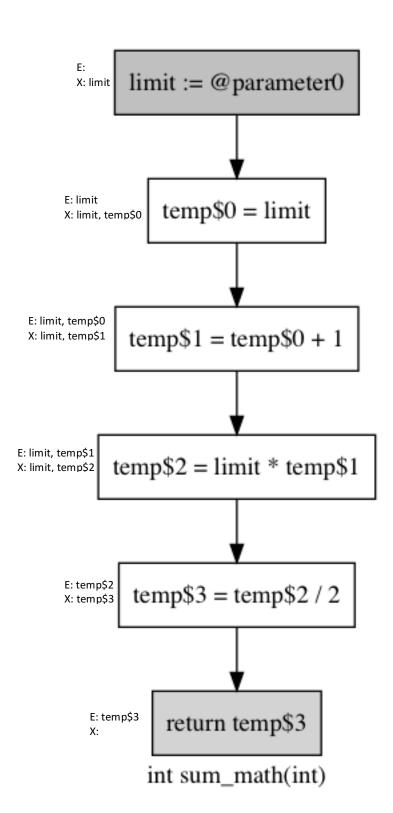
X: total, i, limit
int sum_for(int)

```
/***
                                                                                             E:
 * Sum using while loop
                                                                                                      limit := @parameter0
                                                                                             X: limit
 * @param limit: Limit to sum until
 * @return Sum until limit
public static int sum_while(int limit) {
                                                                                               E: limit
   int total = 0, i = 0;
                                                                                                             total = 0
                                                                                               X: total, limit
   while(i <= limit){</pre>
       total += i;
       ++i;
   }
   return total;
                                                                                             E: total, limit
                                                                                                               i = 0
}
                                                                                             X: total, i, limit
public static int sum_while(int)
                                                                                           E: total, i, limit
                                                                                                            label1: nop
                                                                                          X: total, i, limit
     int limit, total, i, temp$0, temp$1, temp$2;
     limit := @parameter0: int;
     total = 0;
                                                                            E: total, i, limit
                                                                                            if i <= limit goto label2
                                                                           X: total, i, limit
     i = 0;
 label1:
     nop;
                                                                       E: total
                                                                                                                E: total, i, limit
                                                                                goto label3
                                                                                                   label2: nop
     if i <= limit goto label2;</pre>
                                                                                                                X: total, i, limit
                                                                       X: total
     goto label3;
 label2:
                                                                   E: total
                                                                                                                     E: limit, i. total
                                                                              label3: nop
                                                                                                 temp\$0 = total
     nop;
                                                                                                                    X: limit, temp$0, i
                                                                   X: total
     temp$0 = total;
     temp$1 = temp$0 + i;
                                                                 E: total
                                                                            return total
                                                                                              temp$1 = temp$0 + i
                                                                                                                       E: limit, temp$0, i
                                                                 X:
     total = temp$1;
                                                                                                                      X: limit, i, temp$1
     temp$2 = i + 1;
     i = temp$2;
                                                                                  E: limit, I, temp$1
                                                                                                   total = temp$1
                                                                                  X: total, limit, i
     goto label1;
 label3:
     nop;
                                                                              E: total, limit, i
                                                                                                    temp$2 = i + 1
                                                                              X: total, limit, temp$2
     return total;
}
                                                                                  E: total, limit, temp$2
                                                                                                        i = temp$2
                                                                                  X: total, i, limit
                                                                                             E: total, i, limit
                                                                                                              goto label1
                                                                                             X: total, i, limit
```

int sum_while(int)

```
/***
 * Sum using mathematical formula
 * @param limit: Limit to sum until
 * @return Sum until limit
 */
public static int sum_math(int limit) {
    return limit * (limit + 1) / 2;
}

public static int sum_math(int)
{
    int limit, temp$0, temp$1, temp$2, temp$3;
    limit := @parameter0: int;
    temp$0 = limit;
    temp$1 = temp$0 + 1;
    temp$2 = limit * temp$1;
    temp$3 = temp$2 / 2;
    return temp$3;
}
```



```
public static int something_different(int x) {
   int y, z;
   while (x > 2) {
      y = x/2;
      if (y > 3) x = x - y;
      z = x - 4;
      if (z > 0) x = x/2;
      z = z - 1;
   }
   return x;
}
public static int something_different(int)
    int x, y, z, temp$0, temp$1, temp$2, temp$3,
temp$4;
    x := @parameter0: int;
 label1:
    nop;
    if x > 2 goto label2;
    goto label7;
 label2:
    nop;
    temp$0 = x / 2;
    y = temp$0;
    if y > 3 goto label3;
    goto label4;
 label3:
    nop;
    temp$1 = x - y;
    x = temp$1;
 label4:
    nop;
    temp$2 = x - 4;
    z = temp$2;
    if z > 0 goto label5;
    goto label6;
 label5:
    nop;
    temp$3 = x / 2;
    x = temp$3;
 label6:
    nop;
    temp$4 = z - 1;
    z = temp$4;
    goto label1;
 label7:
    nop;
    return x;
}
```

