

NAME Solutions Comp name \_\_\_\_\_

1. (20%) Write a function to compute the average of a series on numbers. The function must first ask the user for the number of values he will enter. Then ask the user for those values. Finally add them up and divide by the number of values entered and return the result.

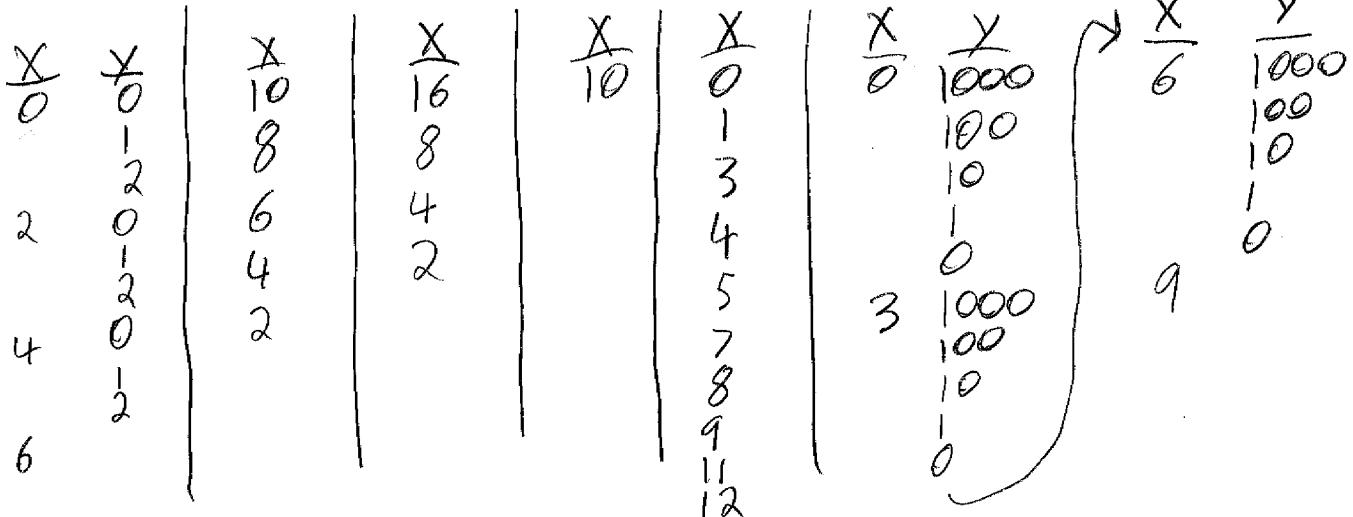
Example. The user enters 3 1 2 3. The first number "3" means there are 3 more numbers to input. The output should be 2 because  $(1+2+3)/3 \rightarrow 2$ .

```
double Average()
{
    int n, i;
    double Sum, Val;
    Sum = 0;

    printf("enter the number of values n");
    scanf("%d", &n);
    for (i=0; i<n; i++)
    {
        printf("enter the %d number: ", i);
        scanf("%Lf", &Val);
        Sum = Sum + Val;
    }
    return Sum/n;
}
```

2. (18%) What is the output of the following code segments?

<pre>for (x = 0; x &lt; 6; x = x + 2)   for (y = 0; y &lt; 2; y++)     printf("%d, ", x + y);</pre>	<u>0, 1, 2, 3, 4, 5,</u>
<pre>for (x = 10; x &gt; 3; x = x - 2)   printf("%d, ", x);</pre>	<u>10, 8, 6, 4,</u>
<pre>for (x = 16; x &lt; 2; x = x / 2)   printf("%d, ", x);</pre>	<u>16, 8, 4 / or nothing since 16 &gt; 2</u>
<pre>x = 10; for (; x &lt; 10; x = x + 13)   printf("%d, ", x);</pre>	<u>nothing since 10 &gt; 10</u>
<pre>for (x = 0; x &lt; 9; x++) {   printf("%d, ", x++);   x = x + 2; }</pre>	<u>0, 4, 8,</u>
<pre>x = 0; do {   for (y = 1000; y &gt; 0; y = y / 10)     printf("%d, %d, ", x, y);   x = x + 3; } while (x &lt; 9);</pre>	<u>0, 1000, 0, 100, 0, 10, 0, 1, 3, 1000, 3, 100, 3, 10, 3, 1, 6, 1000, 6, 100, 6, 10, 6, 1,</u>



3. (20%) For each of the following code segments indicate what is the output. Assume the following declarations: `int w = 0, x = 10, y = 20, z = 30;`

<pre> if (w == 0 &amp;&amp; ! 0)     printf("True"); else     printf("False"); </pre>	<p style="text-align: right;"><u>True</u></p>
<pre> if ( x != 10    ( x + sqrt(z)*sin(k) ) )     printf("True"); else     printf("False"); </pre>	<p style="text-align: right;"><u>True</u></p>
<pre> if (k &lt; 30 &amp;&amp; k &gt; 45)     printf("false"); else     printf("true"); </pre>	<p style="text-align: right;"><u>True</u></p>
<pre> if (x &lt;= 10 &amp;&amp; y &gt; 10)     if ( x &lt; 20    z != 30)         printf("Hi");     else         printf("Hello"); else     if (y == 20)         printf("y = 20"); </pre>	<p style="text-align: right;"><u>Hi</u></p>
<pre> if (x = 1)     if (x &gt; 5)         printf("Hi");     else         printf("Hello"); else     printf("Bye"); </pre>	<p style="text-align: right;"><u>Hello</u></p>

4. (22%) What is the output of the following program?

```
int x = 1, y = 2, z = 3;
```

```
int bill(int x, int *p)
```

```
{
  int y = 50;
  z++;
  *p = *p + 1;
  y = x;
  x = 6;
  return z;
}
```

```
void main()
```

```
{
  int w = 10, *p, z = 10;
```

```
4 - w = bill(x, &x);
```

```
5 - z = bill(z, &y);
```

```
x = x + 5;
```

```
y = y + 1;
```

```
p = &x;
```

```
*p = *p + 3;
```

```
printf("w = %d, x = %d, y = %d, z = %d, \n", w, x, y, z);
```

```
}
```

output

w = 4 x = 10 y = 4 z = 5

Output

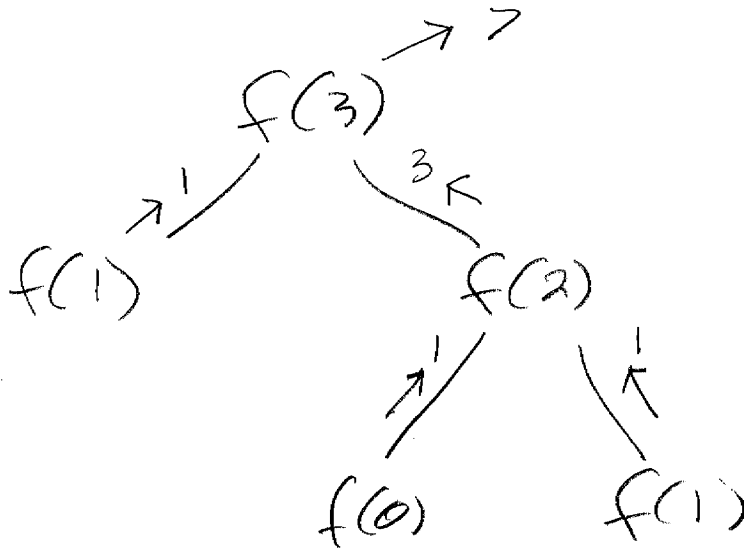
file			bill			main		
X <sub>f</sub>	Y <sub>f</sub>	Z <sub>f</sub>	X <sub>b</sub>	P	Y	W	P	Z <sub>m</sub>
1	2	3	1	&X <sub>f</sub>	50	10	&X <sub>f</sub>	10
2	3	4	6	&Y <sub>f</sub>	1	4		5
7	4	5	10		50			
10			6		10			

5. (20%) What is the output of the following program?

```
#include "stdio.h"

int f(int n)
{
    if (n == 0 || n == 1)
        return 1;
    else
        return 2 * f(n - 1) + f(n - 2);
}

void main ( )
{
    printf(" f(%d) is %d\n", 3, f(3) );
}
```



Output  
f(3) is 7