EXAMINATION INSTRUCTIONS

* Do not turn this page until asked to do so.
* Exam time is **40** minutes.
* Put the answers on the same question sheet, do not use any additional papers, even for scratch.
* Write your name, ID, section no. in the indicated places.
* Read the exam instructions.
* Read the honesty policy.
* Sign the following statement.

**Academic Integrity Policy**

Cheating in Exams is a violation of the Academic Integrity policy of AUC. Whispering, talking, looking at someone else’s paper, or copying from any source is considered cheating. Any one who does any of these actions or her/his answers indicates that she/he did any of them, will receive a punishment ranging from zero in this exam to failing the course. If repeated, it may lead to dismissal from AUC.

* I have read the honesty policy and exam instructions and I am presenting this exam as entirely my effort.

**Signature:** _______________

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**Question 1 (20 points)**

What is the output of each of the following segments:

```cpp
k = 1;
while (k <= 20)
{
    cout << k << endl;
    k += 3;
}
```

```cpp
count = 0;
sum = 0;
while (count < 7)
{
    count += 1;
    sum += count;
    cout << "The partial sum is" << setw(4) << sum << endl;
}
cout << "The count is" << setw(4) << count << endl;
```

```cpp
a = 2;
b = 5;
if (a < b)
    for (k = a; k <= b; k++)
        cout << k << endl;
else
    for (k = a; k >= b; k--)
        cout << k << endl;
```

```cpp
int x = 1, y = 1;
while (y < 3)
{
    y = y + y / x++;
    cout << setw(3) << x << setw(3) << y << endl;
}
```

```cpp
int k;
for (k=0; k <= 15; k++)
    if ((k % 3) != 0) && ((k % 2) != 2)
        cout << k;
cout << setw(4) << k;
```

```cpp
int x = 1, y = 1;
do
{
    y += y / ++x;
    cout << setw(3) << x << setw(3) << y << endl;
} while (y > 1);
```

```cpp
int x, y = 80;
for (x = 5; x > y; x *= 2)
    cout << setw(3) << x << setw(3) << y << endl;
cout << setw(5) << x / y;
```
**Question 2 (15 points)**
Write a program in C++ to enter scores of n students in a test, compute the average score, highest score and lowest score in the test. Add the necessary validations on the user input.
**Question 3 (15 points)**

Write a program in C++ that uses *nested loops* to produce the following output:

```
1 0 0 0 0 0 0 0 0
0 2 0 0 0 0 0 0 0
0 0 3 0 0 0 0 0 0
0 0 0 4 0 0 0 0 0
0 0 0 0 5 0 0 0 0
0 0 0 0 0 6 0 0 0
0 0 0 0 0 0 7 0 0
0 0 0 0 0 0 0 8 0
0 0 0 0 0 0 0 0 9
```