# Introduction to Computing
## CS 151 - 040

Department of Physical and Computer Sciences

Medgar Evers College

## Exam 3 - Take Home

Name: ───────────────────────────────

**Directions:** Read the questions carefully. Write legibly to earn credit. Good Luck!

| Section | Max Points | Points Earned |
|---------|------------|---------------|
| 1       | 8          |               |
| 2       | 8          |               |
| 3       | 4          |               |
| **Total** | 20       |               |

# Section 1: Syntax

**Write ONLY the statements requested and required.**

1) Initialize two char arrays to "Initial" in different ways. (Initialization is the process of declaring and assigning a value to a variable in a single step.)

2) Write a statement(s) that will continually display "Why?" on separate lines.

3) Given an int variable, $n$, that has been initialized, write a statement(s) that will the display the sum of squares from 1 to $n$.

4) Given a char array, $str$, initialized to "ADER", write a statement(s) that will display two four letter words using only $str$ (You can repeat letters).

5) Given a string variable, $str$, that has be initialized, write a statement(s) that will display $str$ forward and backwards on the same line without any delimiters between the characters.

6) Given an int variable, $n$, that has been initialized, write a statement(s) that will displays the number of factors of $n$.

7) Write a statement(s) that continually prompt a user to enter a word that consists only of lowercase letters (use a string variable).

8) Given an int array, $nums$, that has $n$ elements, write a statement(s) that will store the first $n$ multiples of 4 excluding those that are also multiples of 3 and not 5 in $nums$.

# Section 2: Tracing

**Write the trace table and the output (code produced by cout statemants) of each code segment.**

1) Given input {4}

```cpp
int n, i = 0, j;
char c;
cin >> n;
while(i < n)
{
 for(j = i, c = 'A';j < n;j += 1,c += 1)
 {
  cout << c;
 }
 cout << '\n';
 i += 1;
}
```

2)

```cpp
int val[6] = {3,0,2};
for(int i = 3,j = 0;i < 6;i += 1)
{
 val[i] = val[i-2] + val[i-3];
 cout << val[j] << " "<< val[j+1] << " ";
 if(i < 4)
 {
  j += 2;
 }
 else
 {
  j += 1;
 }
}
```

## Section 3: Extra Credit

Write the function definition of the bool function named `IsPalindrome()` that takes a string named *str* as a parameter. It returns true if *str* is a palindrome; otherwise, it returns false.