

MIDTERM2 B

Section A – 3 Points Each (do 7 out of 8)

Q1) What is the output of the loop below?

Q1) **567 678**

```
for (int a = 5,b = 6, c= 7;  
     a <= 6;  
     a++,b++,c++)  
{  
    cout << a << b << c << " ";  
}
```

Q2) What is the output of the loop below?

Q2) **2 4 6 8 10**

```
int i = 2;  
while (i%10!=0)  
{  
    cout << i << " ";  
    i+=2;  
}  
cout << i << endl;
```

Q3) What is the output of the loop below?

Q3) **20**

```
int i = 0;
do
{
    i++;
} while (i < 20);
cout << i << endl;
```

Q4) What is the output of the loop below?

Q4) **0 1 2 3 4 5 6 7 8 9**

```
for (int i = 0; i < 10; i += 2)
{
    cout << i << " ";
    i--;
}
```

Q5) What is the output of the loop below?

Q5) **0 2 4 6 8**

```
for (int i = 0; i < 10; i += 2)
    cout << i << " ";
cout << endl;
```

Q6) What is the output of the loop below?

Q6) **10 8 6 4**

```
int i = 10;
do
{
    cout << i << " ";
    i-=2;
} while (i > 4);
cout << i;
```

Q7) What is the output of the loop below?

Q7) 0 1 2 3 4 5

```
int i = 0;
while (1 <= 1)
{
    cout << i << " ";
    if (i == 5)
        break;
    i++;
}
cout << endl;
```

Q8) What is the output of the loop below?

Q8) 10 9 8 7 6 5

```
int i = 10;
do
{
    cout << i << " ";
    i--;
} while (i > 4);
```

Section B – 10 Points Each (do 3 out 4)

P1)

*Return average of the numbers between start and finish using a for loop**Average = Sum/[count of numbers]**CalculateAverage(4,6) ==> 5**CalculateAverage (1,2) ==> 1.5***double CalculateAverage(int start, int finish)**

```
{  
    double average=0;  
    int count=0;  
    for (int i = start; i <= finish; i++)  
    {  
        average += i;  
        count++;  
    }  
    return(average / count);  
}
```

P2)

Write a Min function that takes two required parameters and three optional parameters

Use the conditional operator

Assume that only positive numbers will be passed in

Examples

Min(1,2) ==> 1

Min(1,2,3) ==> 1

Min(20,2,3,4) ==> 2

Min(20,200,3,4,100) ==> 3

```
int min(int i1, int i2, int i3 = -1, int i4 = -1, int i5 = -1)
```

```
{
```

```
    int min = i1 < i2 ? i1 : i2;
```

```
    if(i3 > -1)
```

```
        min = min < i3 ? min : i3;
```

```
    if (i4 > -1)
```

```
        min = min < i4 ? min : i4;
```

```
    if (i5 > -1)
```

```
        min = min < i5 ? min : i5;
```

```
    return(min);
```

```
}
```

P3)

Using a while loop, add digits of a number

AddDigits(7777) ==> 28

AddDigits(27) ==> 9

AddDigits(0) ==> 0

int AddDigits(int n)

```
{  
    int sum = 0;  
    while (n)  
    {  
        sum += n % 10;  
        n /= 10;  
    }  
    return(sum);  
}
```

P4)

Use a double for loop to output the following

For example PrintPattern(10) will output the following...

```
XXXXXXXXXX
 XXXXXXXX
  XXXXXXXX
   XXXXXX
    XXXXX
     XXXX
      XXX
       XX
        X
```

```
void PrintPattern(int n)
```

```
{
    for (int row = 1; row <= n; row++, cout << endl)
    {
        for (int col = 1; col <= n; col++)
            if (col < row)
                cout << " ";
            else
                cout << "X";
    }
}
```