Assignment 3

Analyze the following code snippets and give your inferences

a) What will be the value of j for below-mentioned values of i?

```
switch (i) {
case 2: i = i * i; case 4: i = i * i; default: i = i * i;
break;
case 16: i = i * i;}j = i;
```

Corrected-

```
#include <stdio.h>
int main()
{
   int i = 1, j;
   printf("i is %d \n", i);
   switch (i) {
   case 2: i = i * i;
   case 4: i = i * i;
   default: i = i * i;
   break;
   case 16: i = i * i;
}
j = i;
   printf("j is %d \n", j);
   return 0;
}
```

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Inference-

For i = 2, j =256

For i = 4, j =256

For i = 16, j =256

For i = 1, j =1

b) What would be the output of the following program

```
#define m 5+5 const int n = 5+5;
void main() {
int a = 0, b = 0;
a = m * m; b = n * n;
printf("%d %d\n", a, b);
}
```

Corrected-

```
#include <stdio.h>
#define m (5+5)
const int n = 5+5;
void main() {
int a = 0, b = 0;
a = m * m;
b = n * n;
printf("%d %d\n", a, b);
}
```

Inference- Value of a and b is 100

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c) What would be the output of the following program

```
#include <stdio.h>
int main()
{
int i = 1, j = 1, k = 1, count = 0;

while (i < 2) {
for(; j < 4; j += k) do {
++count; k += i;
} while (k < 8); i += j;
}
printf("Loop Indices: %d %d %d\n", i, j, k); printf("Number
of iterations = %d\n", count);
return 0;
}
#include <stdio.h>
int main()
{
    int i = 1, j = 1, k = 1, count = 0;
    while (i < 2) {
        for(; j < 4; j += k) do {
```

```
        ++count; k += i;
    }
    while (k < 8);
    i += j;
    }
    printf("Loop Indices: %d %d %d\n", i, j, k);
    printf("Number of iterations = %d\n",count);
    return 0;
}
```

Inference- Loop Indices are 10, 9, and 8 respectively whereas Number of iterations is 7

d) Implement C programs for the following problem statements:

Fibonacci Series: Fibonacci numbers are the numbers in the following integer

sequence: 0,1,1,2,3,5,8,13,21 ... By definition, the first two Fibonacci numbers

are 0 and 1, and each subsequent number is the sum of the previous two

numbers.Write a program that accepts a set of ‘k’ seed values, and find the

Fibonacci series for n with seed values fib(n) = fib(n – 1) + fib (n – k)

```
#include <stdio.h>
int main() {
  int n, k=0, N;
  printf("Enter the number of terms to generate in the fibonacci series: ");
  scanf("%d", &N);
  printf("Enter the value of k: ");
  scanf("%d", &k);

  int fib[k+2+N];
  fib[0]=0;
  fib[1]=1;

  printf("Enter set of %d seed values: \n", k);
  for (n=2; n<k+2; n++)
  {
    scanf("%d", &fib[n]);
  }
  printf("The fibonacci series is 0");
  for (n=1; n<k+2; n++)
  {
    printf(", %d",fib[n]);
  }
  k=k+2; //Since fibonacci starts with predefined values 0 and 1
  for (n=k; n<=k+N-1; n++)
```

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```
  {
    fib[n]= fib[n-1] + fib[n-k];
    printf(", %d", fib[n]);
  }
  return 0;
 }
```

Inference- First two values of Fibonacci series are predetermined as 0 and 1 respectively. It works only when k<n since the term number can’t be negative (from formula of Fibonacci series).

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