# Practical 05

PS Gunathilake

30138

# Practical 05

## Section A

**1)**

- **While**

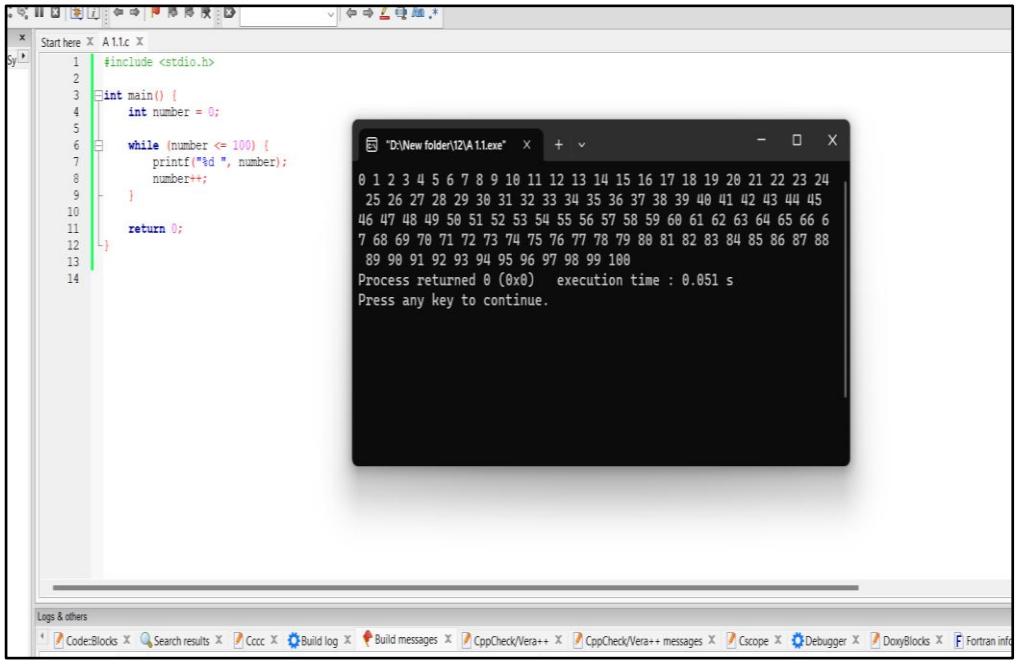
```
#include <stdio.h>

int main() {
  int number = 0;

  while (number <= 100) {
    printf("%d ", number);
    number++;
  }

  return 0;
}
```

- **DO While**

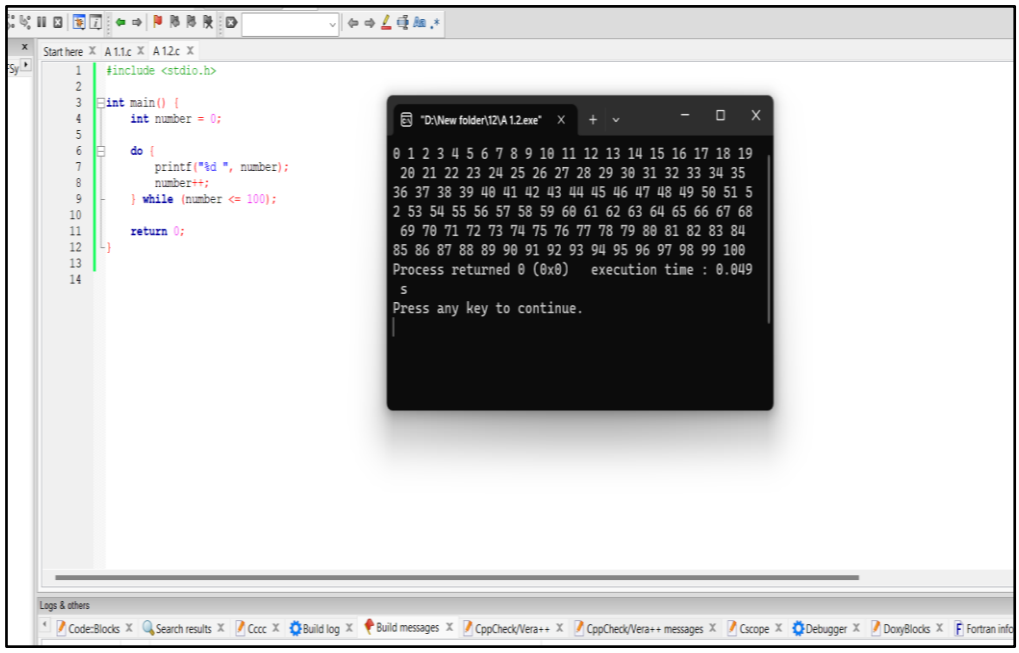
```
#include <stdio.h>

int main() {
  int number = 0;

  do {
    printf("%d ", number);
    number++;
  } while (number <= 100);

  return 0;
}
```

- **For**

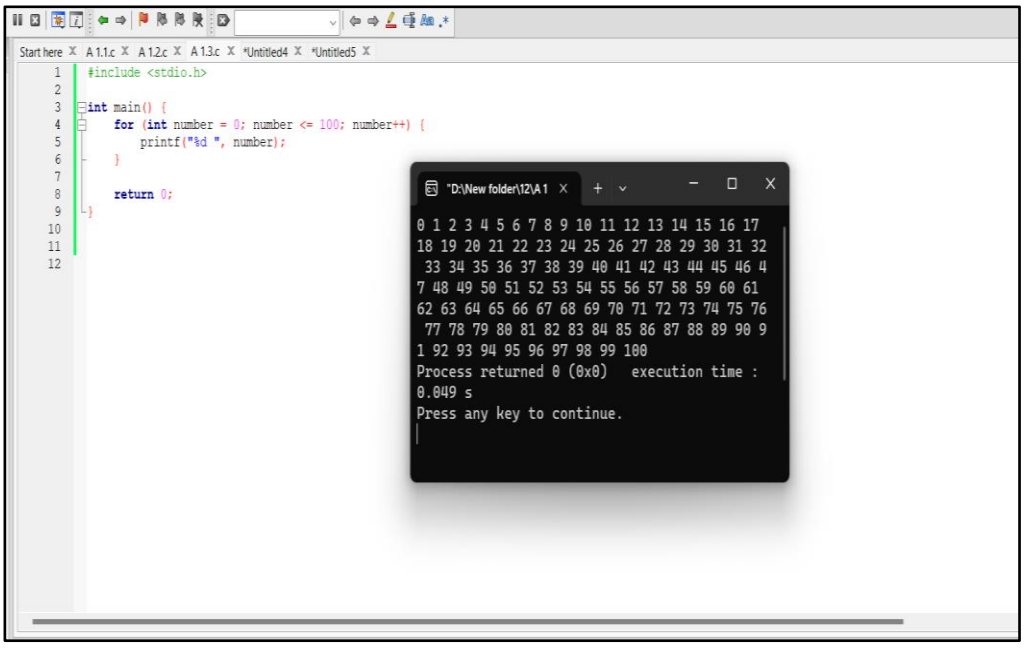
```
#include <stdio.h>

int main() {
  for (int number = 0; number <= 100;
number++) {
    printf("%d ", number);
  }

  return 0;
}
```




**While**



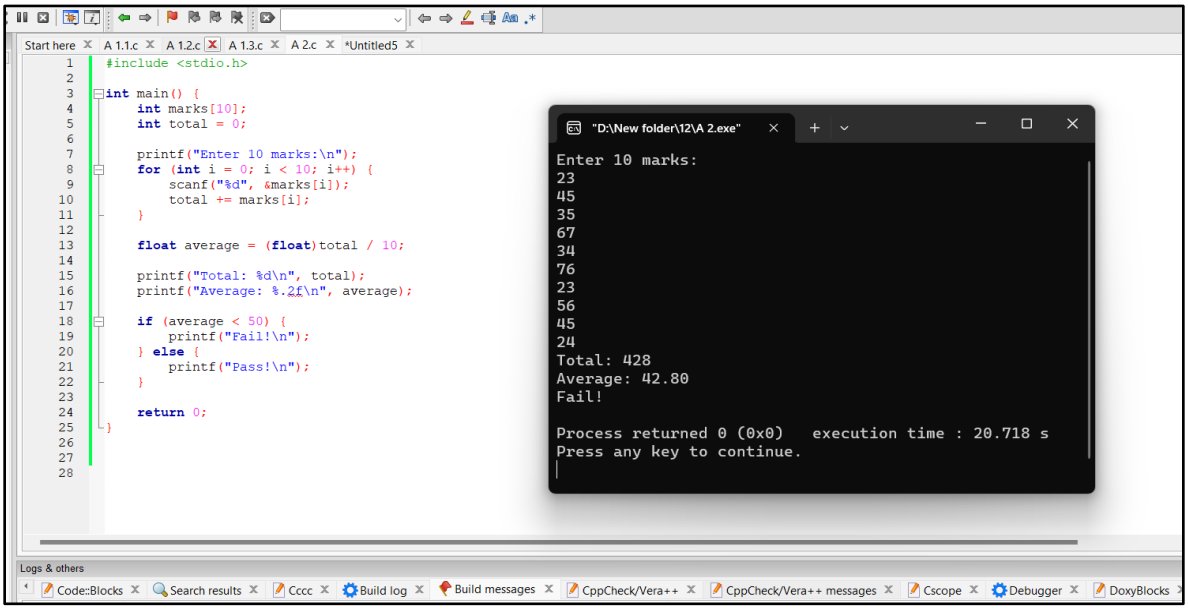

**Do While**




**For**

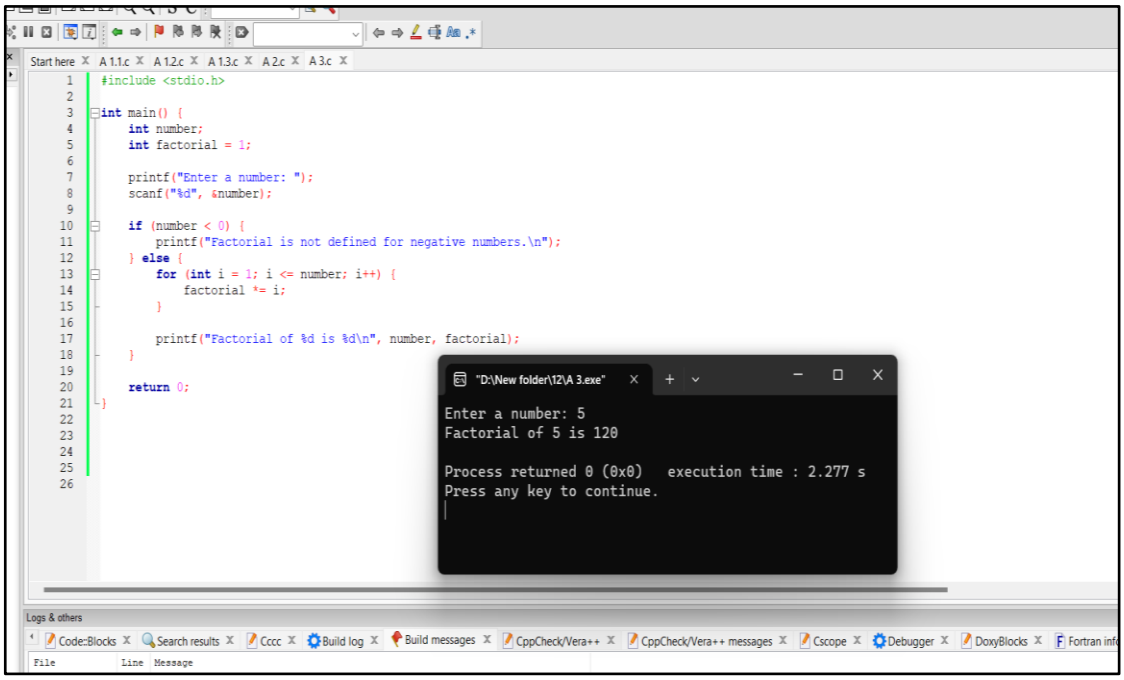
**2)**

```c
#include <stdio.h>
int main() {
    int marks[10];
    int total = 0;

    printf("Enter 10 marks:\n");
    for (int i = 0; i < 10; i++) {
        scanf("%d", &marks[i]);
        total += marks[i];
    }
    float average = (float)total / 10;
    printf("Total: %d\n", total);
    printf("Average: %.2f\n", average);
    if (average < 50) {
        printf("Fail!\n");
    } else {
        printf("Pass!\n");
    }
    return 0;
}
```



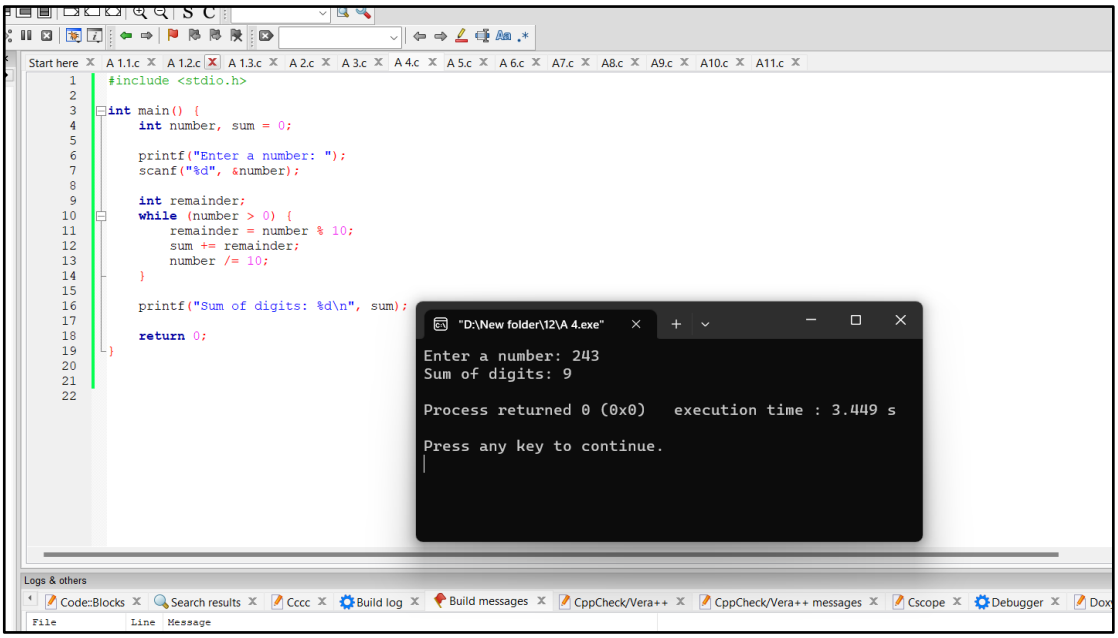
**3)**

```c
#include <stdio.h>

int main() {
    int number;
    int factorial = 1;

    printf("Enter a number: ");
    scanf("%d", &number);

    if (number < 0) {
        printf("Factorial is not defined for negative numbers.\n");
    } else {
        for (int i = 1; i <= number; i++) {
            factorial *= i;
        }
        printf("Factorial of %d is %d\n", number, factorial);
    }
    return 0;
}
```



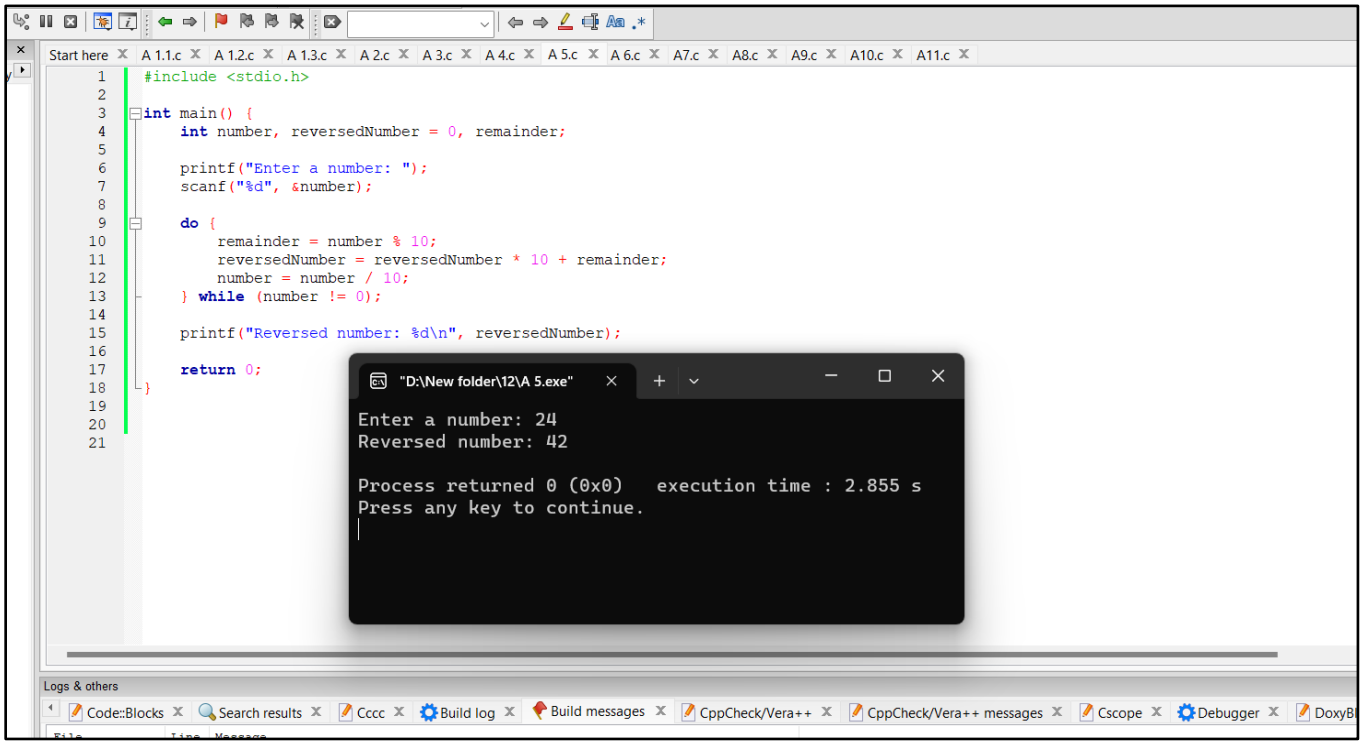
**4)**

```
#include <stdio.h>

int main() {
   int number, sum = 0;

   printf("Enter a number: ");
   scanf("%d", &number);

   int remainder;
   while (number > 0) {
      remainder = number % 10;
      sum += remainder;
      number /= 10;
   }

   printf("Sum of digits: %d\n", sum);

   return 0;
}
```



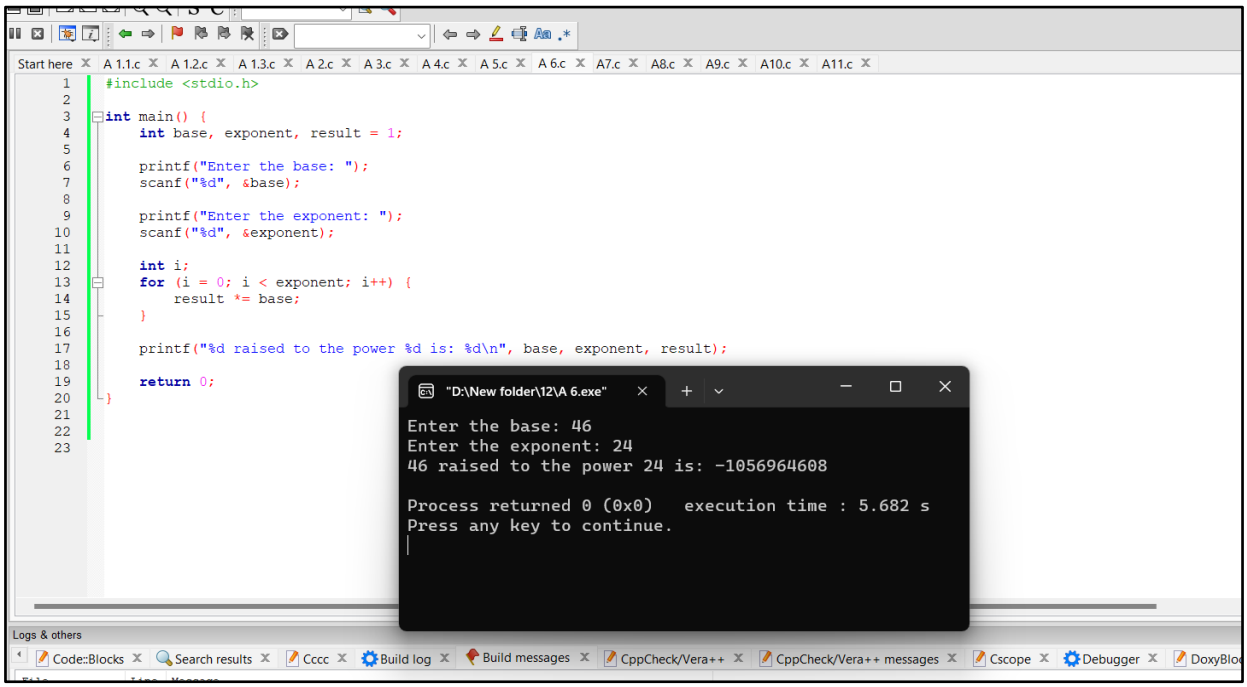
**5)**

```
#include <stdio.h>
int main() {
    int number, reversedNumber = 0, remainder;

    printf("Enter a number: ");
    scanf("%d", &number);

    do {
        remainder = number % 10;
        reversedNumber = reversedNumber * 10 + remainder;
        number = number / 10;
    } while (number != 0);

    printf("Reversed number: %d\n", reversedNumber);

    return 0;
}
```



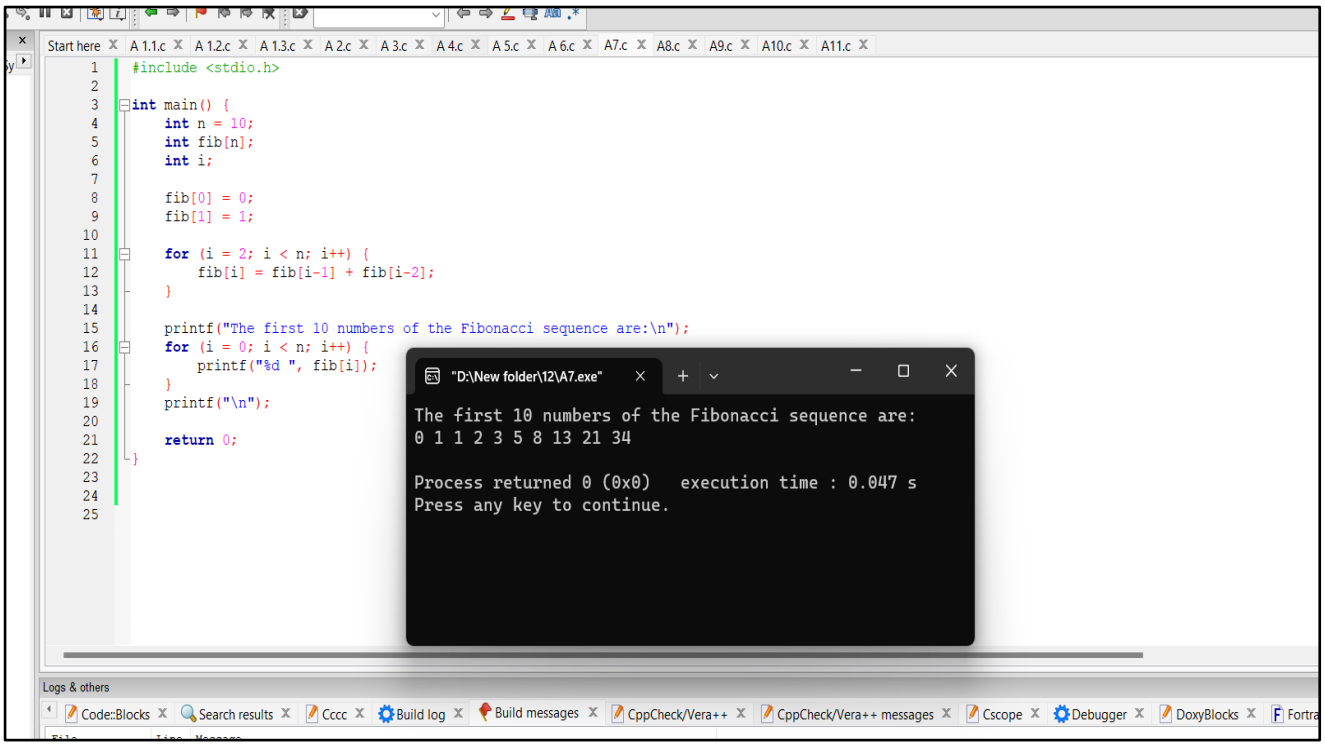
**6)**

```
#include <stdio.h>
int main() {
    int base, exponent, result = 1;

    printf("Enter the base: ");
    scanf("%d", &base);

    printf("Enter the exponent: ");
    scanf("%d", &exponent);

    int i;
    for (i = 0; i < exponent; i++) {
        result *= base;
    }
    printf("%d raised to the power %d is: %d\n", base, exponent, result);

    return 0;
}
```



**7)**

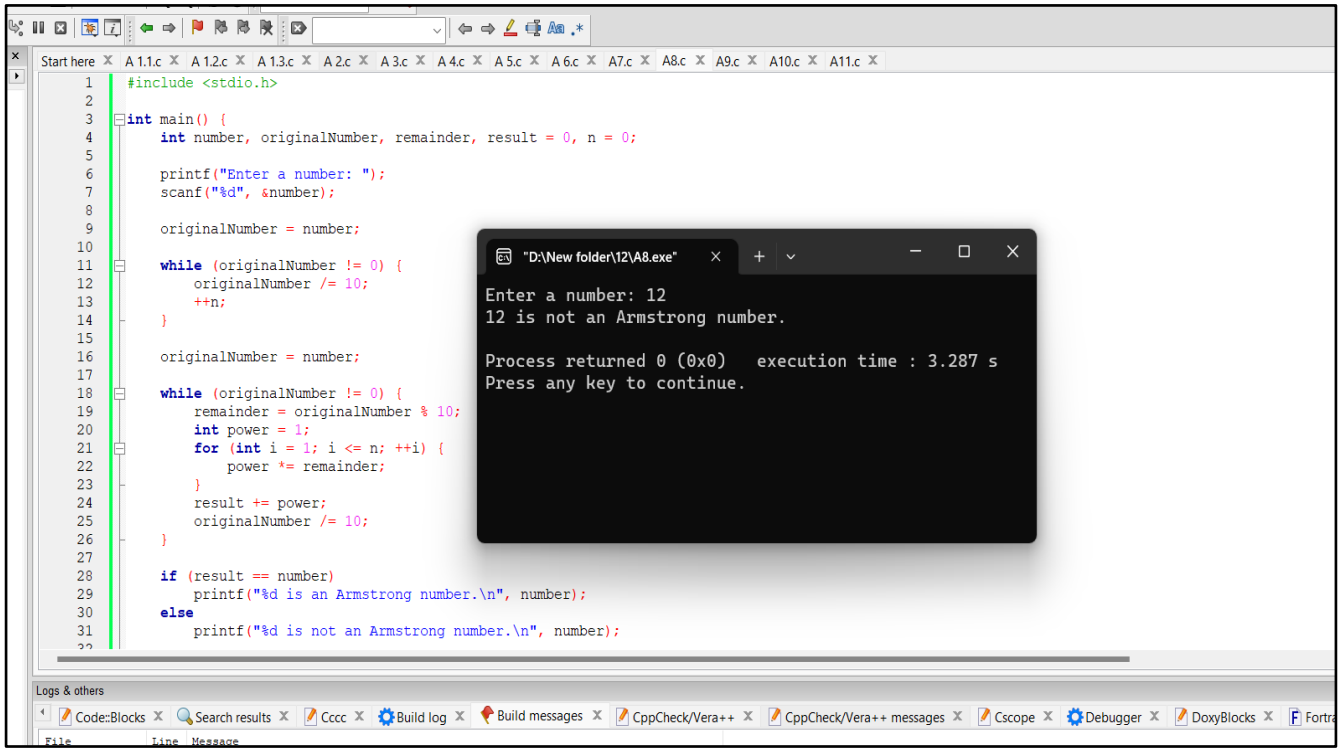
```c
#include <stdio.h>

int main() {
   int n = 10;
   int fib[n];
   int i;

   fib[0] = 0;
   fib[1] = 1;

   for (i = 2; i < n; i++) {
      fib[i] = fib[i-1] + fib[i-2];
   }

   printf("The first 10 numbers of the Fibonacci sequence are:\n");
   for (i = 0; i < n; i++) {
      printf("%d ", fib[i]);
   }
   printf("\n");

   return 0;
}
```



**8)**

```
#include <stdio.h>

int main() {
   int number, originalNumber, remainder, result = 0, n = 0;

   printf("Enter a number: ");
   scanf("%d", &number);

   originalNumber = number;

   while (originalNumber != 0) {
      originalNumber /= 10;
      ++n;
   }

   originalNumber = number;

   while (originalNumber != 0) {
      remainder = originalNumber % 10;
      int power = 1;
      for (int i = 1; i <= n; ++i) {
         power *= remainder;
      }
      result += power;
      originalNumber /= 10;
   }

   if (result == number)
      printf("%d is an Armstrong number.\n", number);
```

```
    else
        printf("%d is not an Armstrong number.\n", number);

    return 0;
}
```

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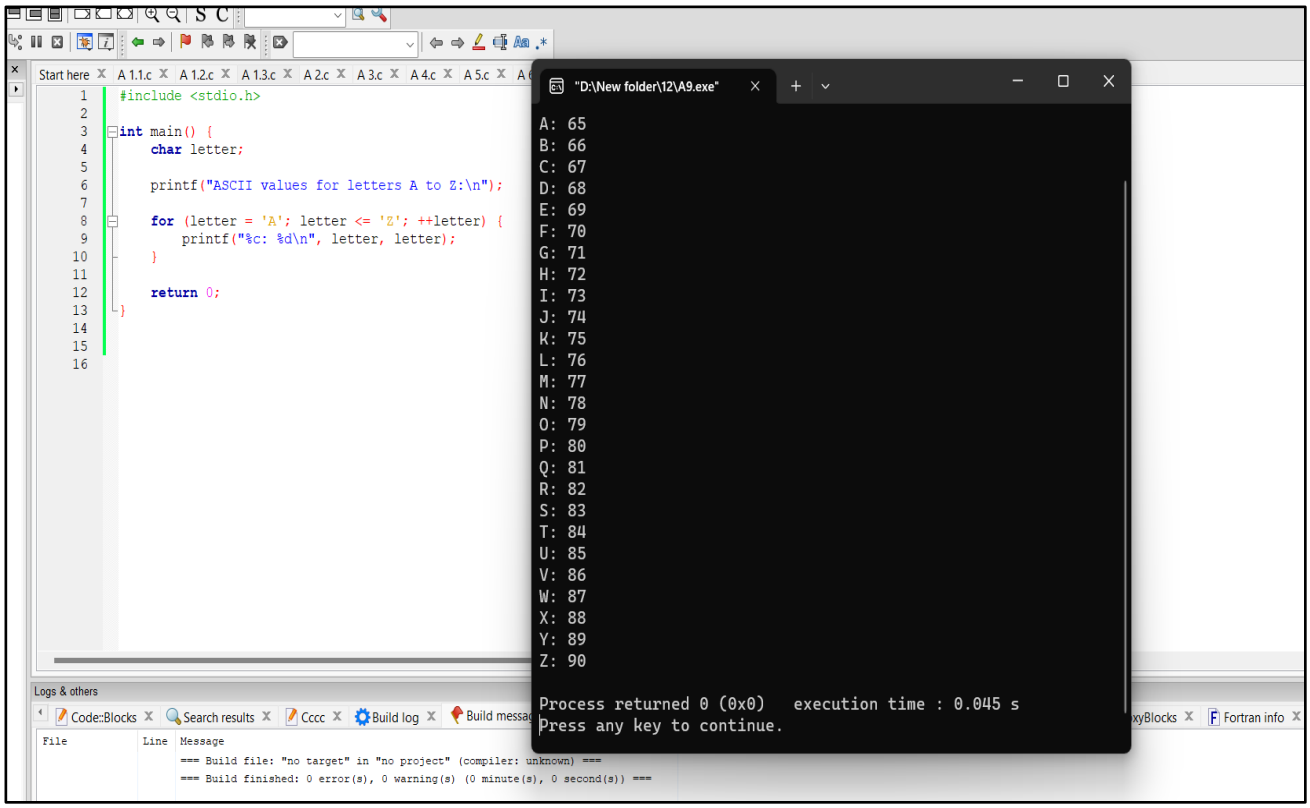
**9)**

```
#include <stdio.h>

int main() {
    char letter;

    printf("ASCII values for letters A to Z:\n");

    for (letter = 'A'; letter <= 'Z'; ++letter) {
        printf("%c: %d\n", letter, letter);
```

```
    }

    return 0;
}
```

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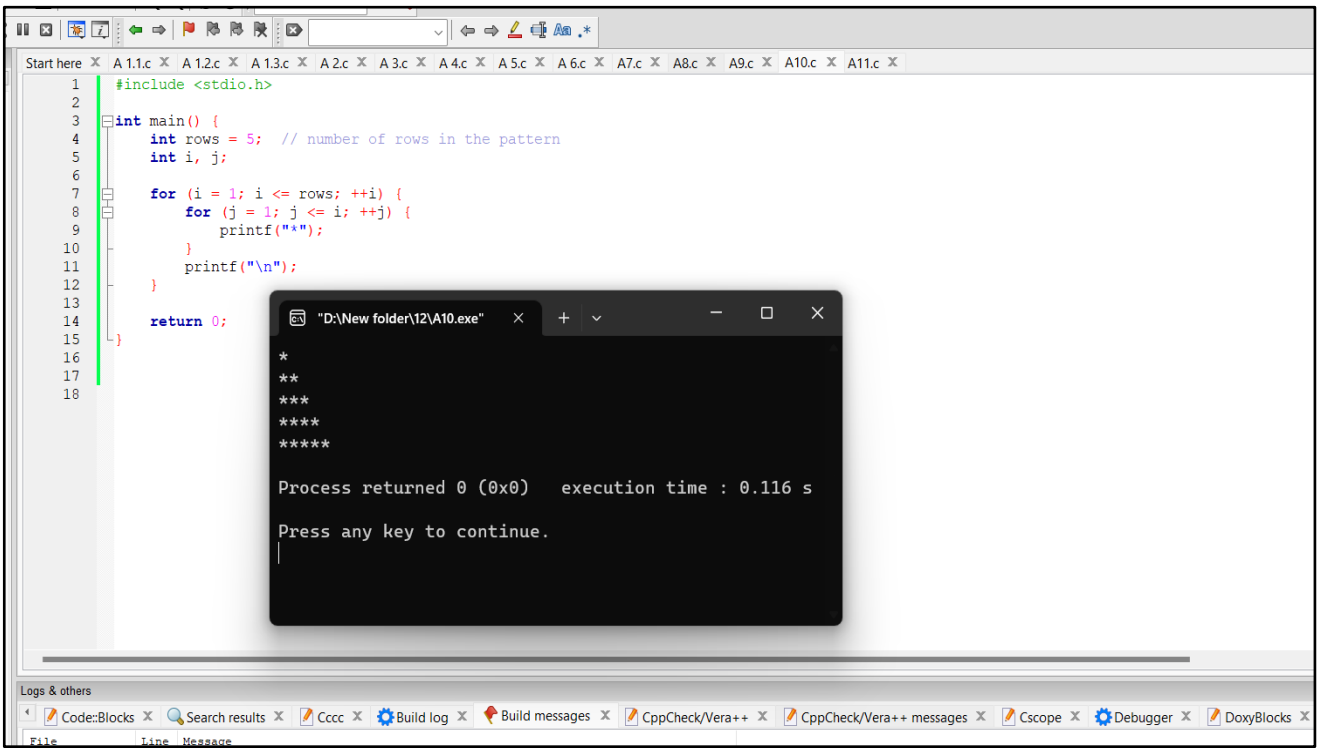
**10)**

```
#include <stdio.h>
int main() {
    int rows = 5;  // number of rows in the pattern
    int i, j;

    for (i = 1; i <= rows; ++i) {
        for (j = 1; j <= i; ++j) {
            printf("*");
        }
```

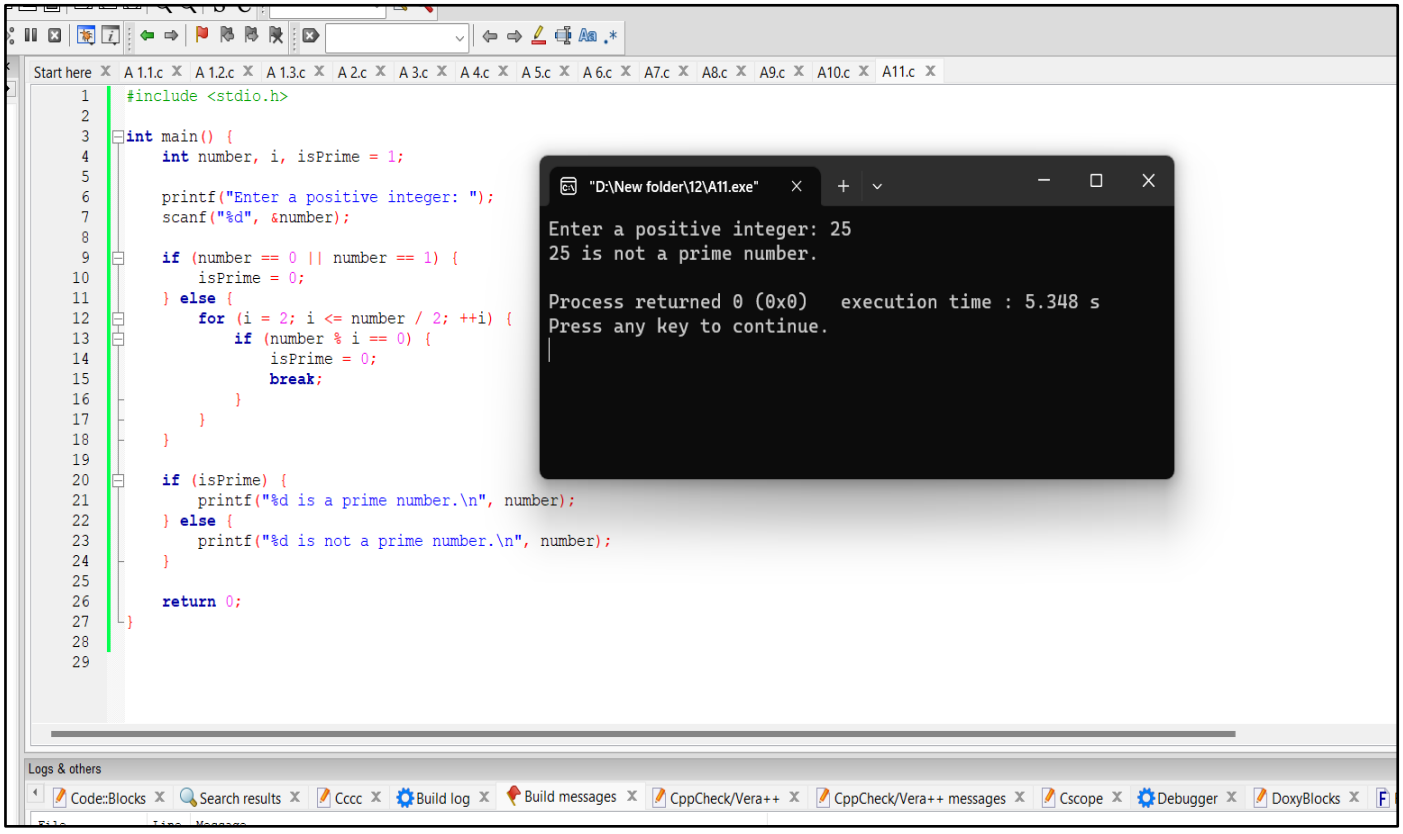
```
        printf("\n");
    }
    return 0;
}
```




**11)**

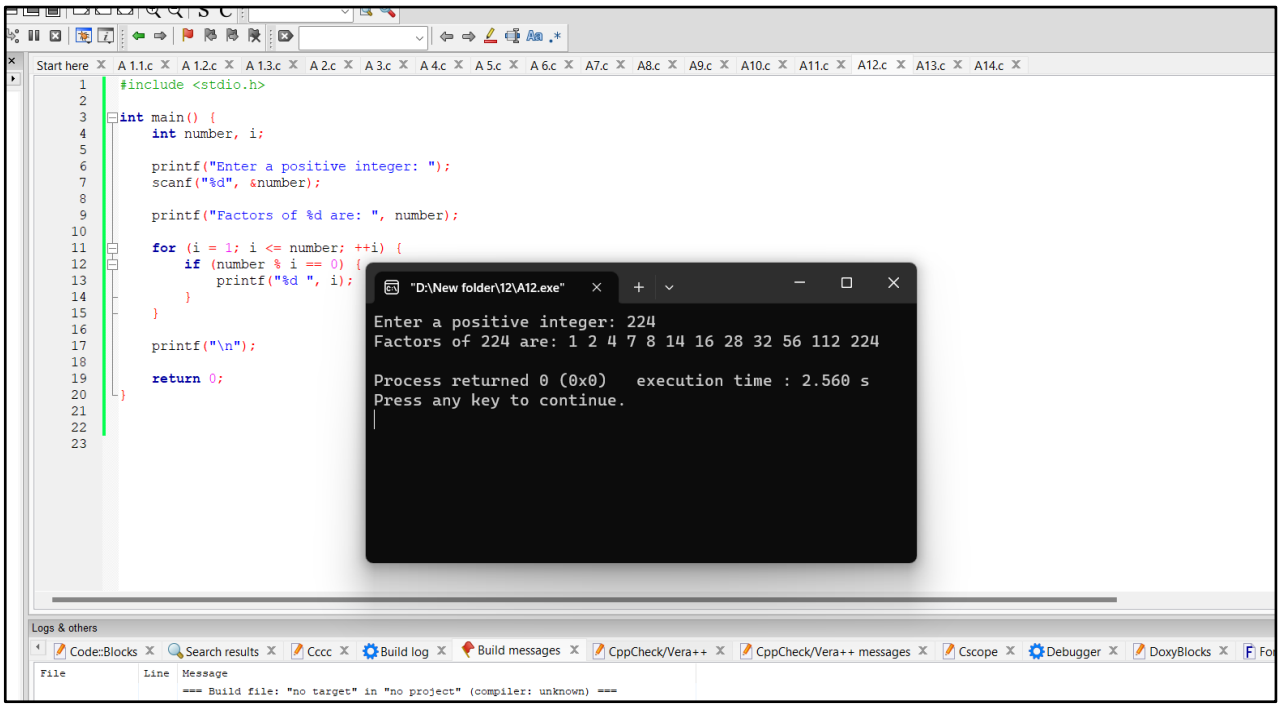
```
#include <stdio.h>

int main() {
    int number, i, isPrime = 1;

    printf("Enter a positive integer: ");
    scanf("%d", &number);

    if (number == 0 || number == 1) {
        isPrime = 0;
```

```
    } else {
        for (i = 2; i <= number / 2; ++i) {
            if (number % i == 0) {
                isPrime = 0;
                break;
            }
        }
    }

    if (isPrime) {
        printf("%d is a prime number.\n", number);
    } else {
        printf("%d is not a prime number.\n", number);
    }

    return 0;
}
```



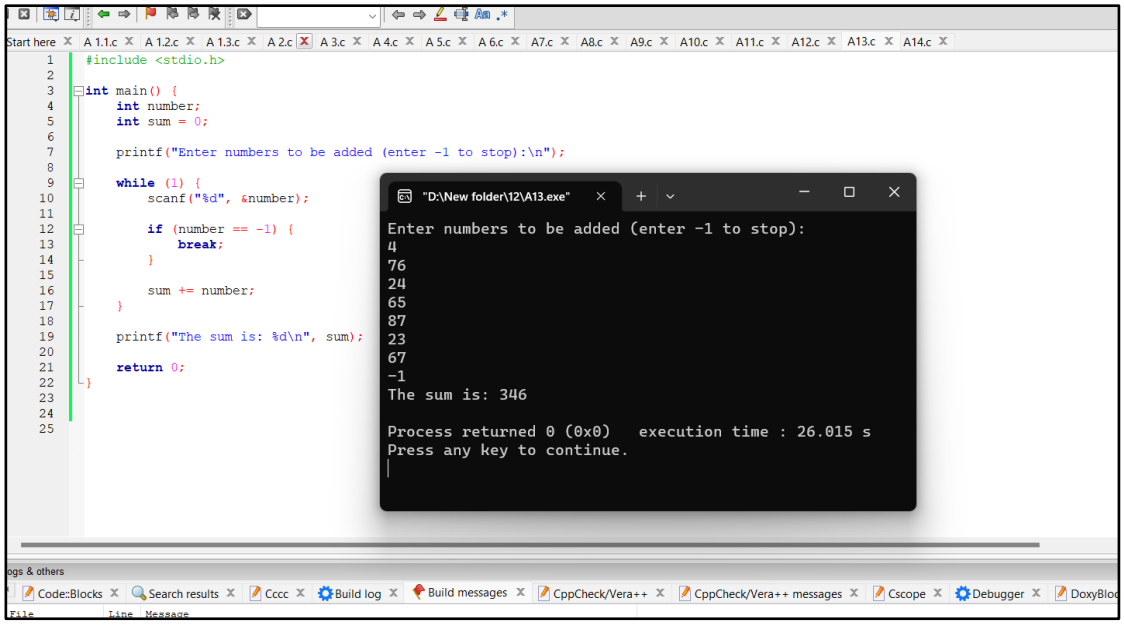
**12)**

```
#include <stdio.h>
int main() {
   int number, i;

   printf("Enter a positive integer: ");
   scanf("%d", &number);

   printf("Factors of %d are: ", number);

   for (i = 1; i <= number; ++i) {
      if (number % i == 0) {
         printf("%d ", i);
      }
   }
   printf("\n");
   return 0;
}
```



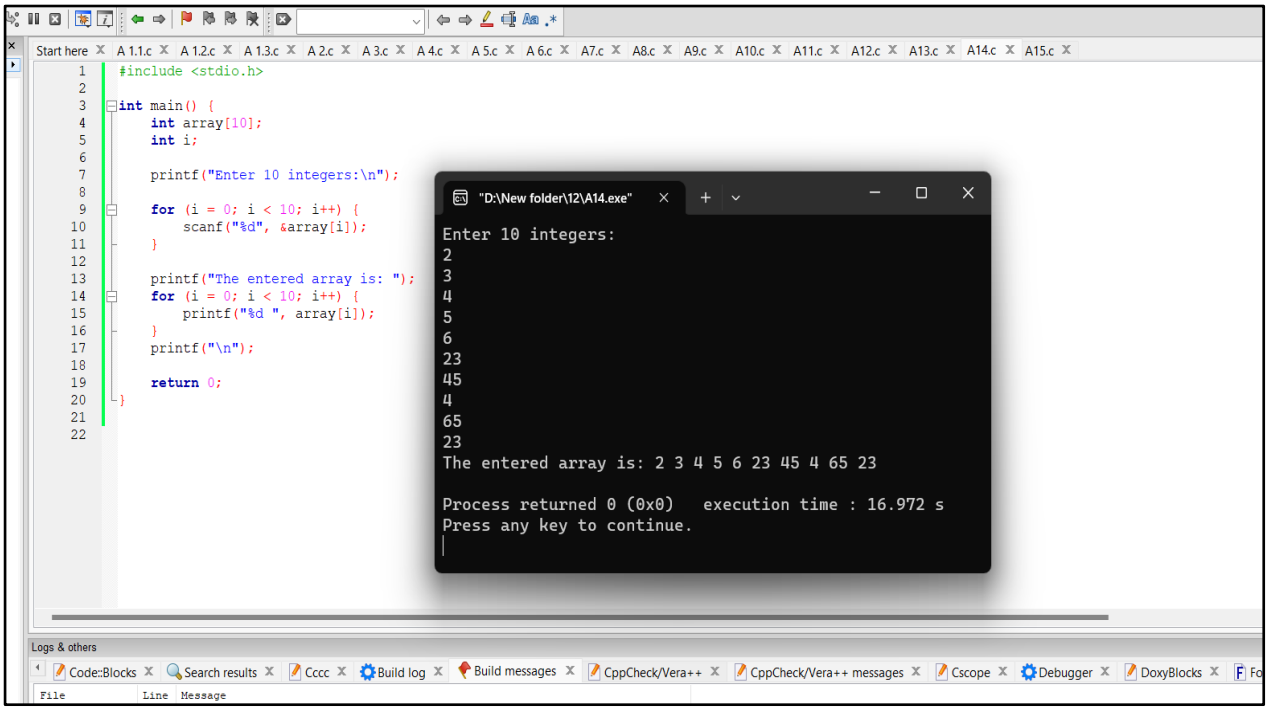
**13)**

```
#include <stdio.h>
int main() {
   int number;
   int sum = 0;

   printf("Enter numbers to be added (enter -1 to stop):\n");

   while (1) {
      scanf("%d", &number);

      if (number == -1) {
         break;
      }
      sum += number;
   }
   printf("The sum is: %d\n", sum);

   return 0;
}
```



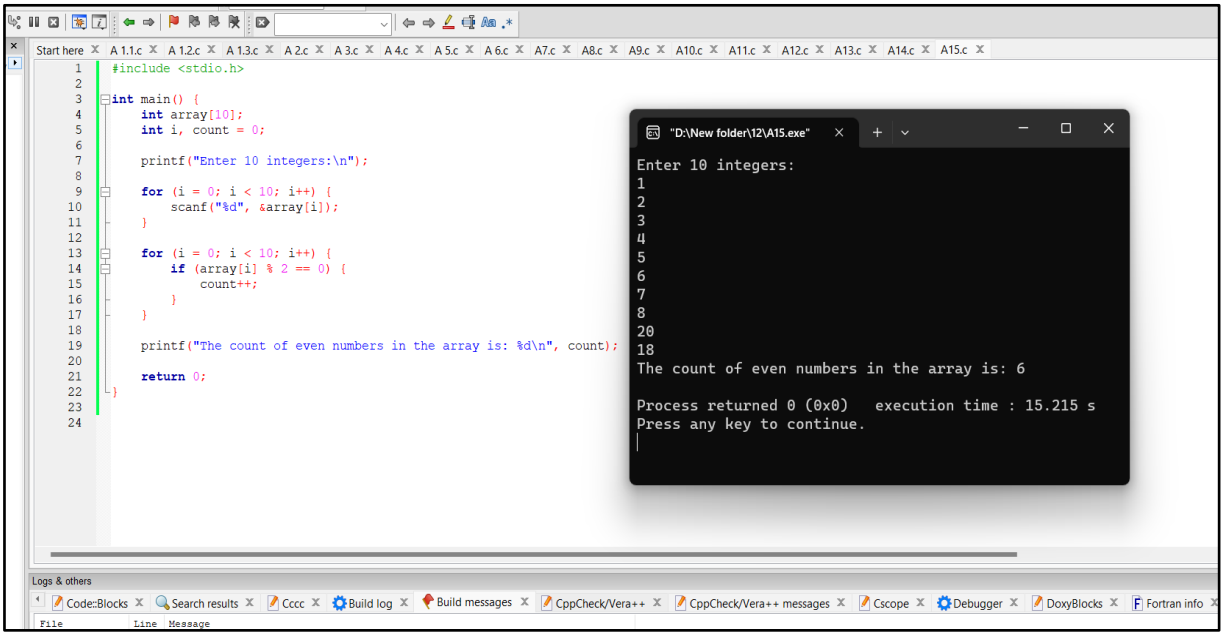
**14)**

```
#include <stdio.h>
int main () {

   int array [10];
   int i;

   printf("Enter 10 integers:\n");

   for (i = 0; i < 10; i++) {
      scanf("%d", &array[i]);
   }
   printf("The entered array is: ");
   for (i = 0; i < 10; i++) {
      printf("%d ", array[i]);
   }
   printf("\n");
   return 0;
}
```



**15)**

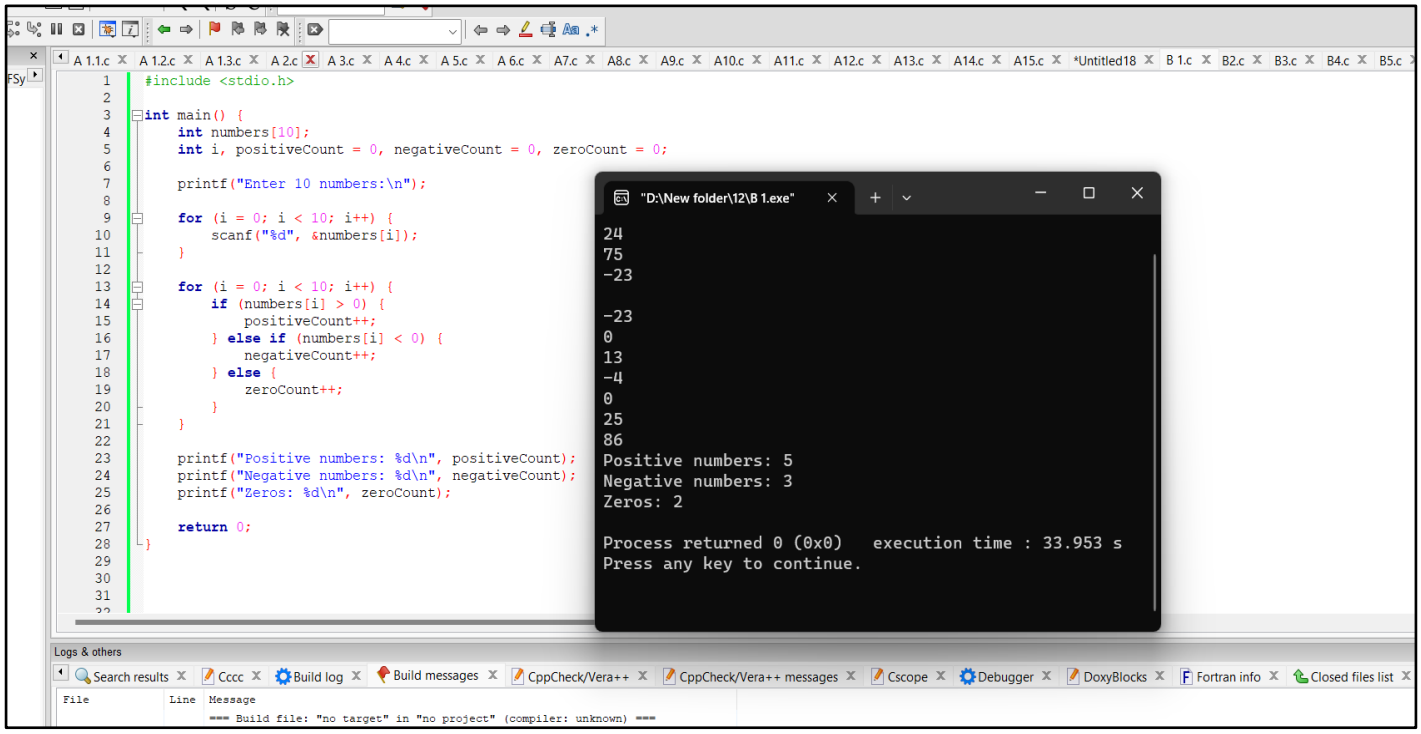
```
#include <stdio.h>
int main() {

   int array[10];
   int i, count = 0;

   printf("Enter 10 integers:\n");

   for (i = 0; i < 10; i++) {
      scanf("%d", &array[i]);
   }
   for (i = 0; i < 10; i++) {
      if (array[i] % 2 == 0) {
         count++;
      }
   }
   printf("The count of even numbers in the array is: %d\n", count);

   return 0;
}
```



## Section B

**1.**

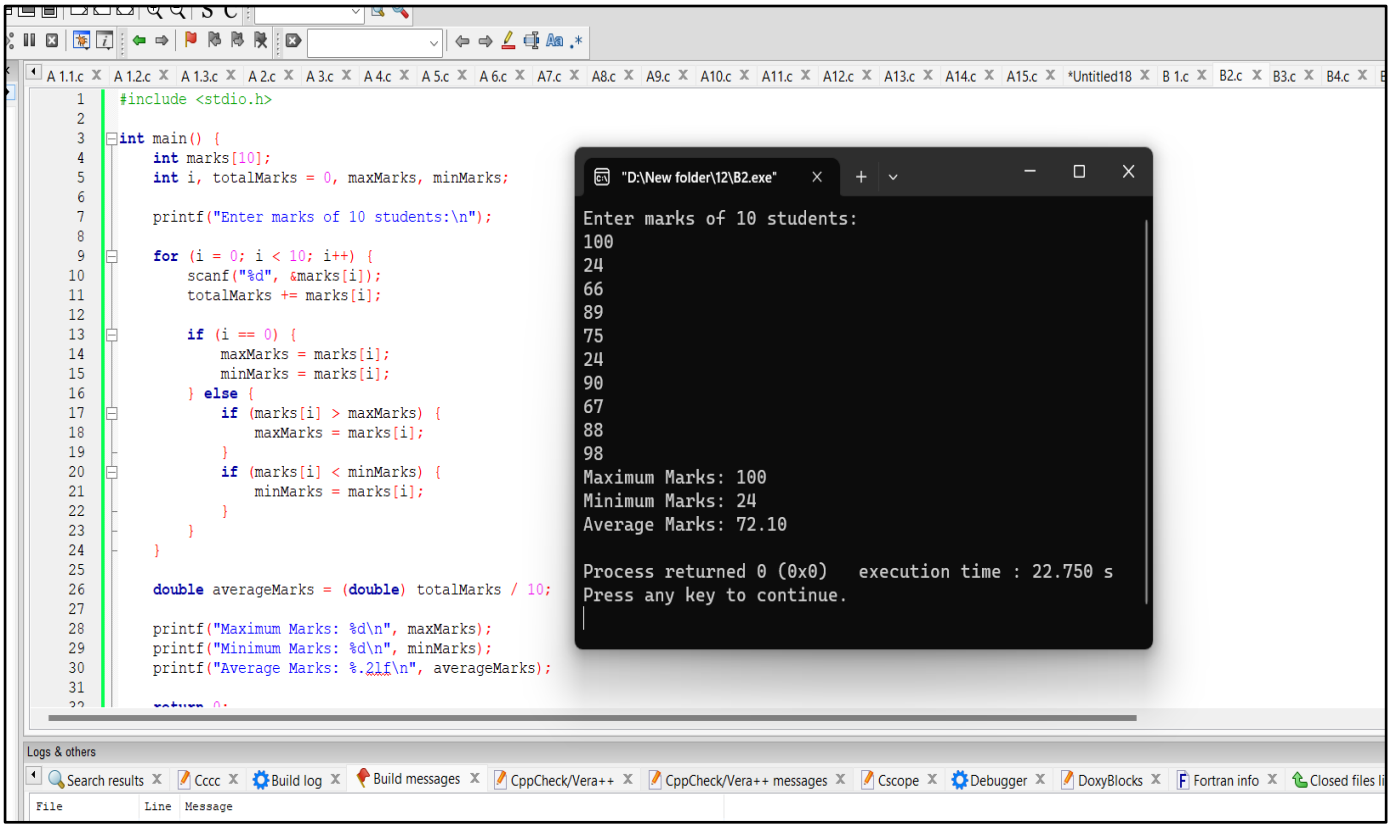
```
#include <stdio.h>
int main() {
   int numbers [10];
   int i, positiveCount = 0, negativeCount = 0, zeroCount = 0;

   printf("Enter 10 numbers:\n");

   for (i = 0; i < 10; i++) {
      scanf("%d", &numbers[i]);
   }
   for (i = 0; i < 10; i++) {
      if (numbers[i] > 0) {
         positiveCount++;
      } else if (numbers[i] < 0) {
         negativeCount++;
      } else {
         zeroCount++;
      }
   }
   printf("Positive numbers: %d\n", positiveCount);
   printf("Negative numbers: %d\n", negativeCount);
   printf("Zeros: %d\n", zeroCount);

   return 0;
}
```




**2.**

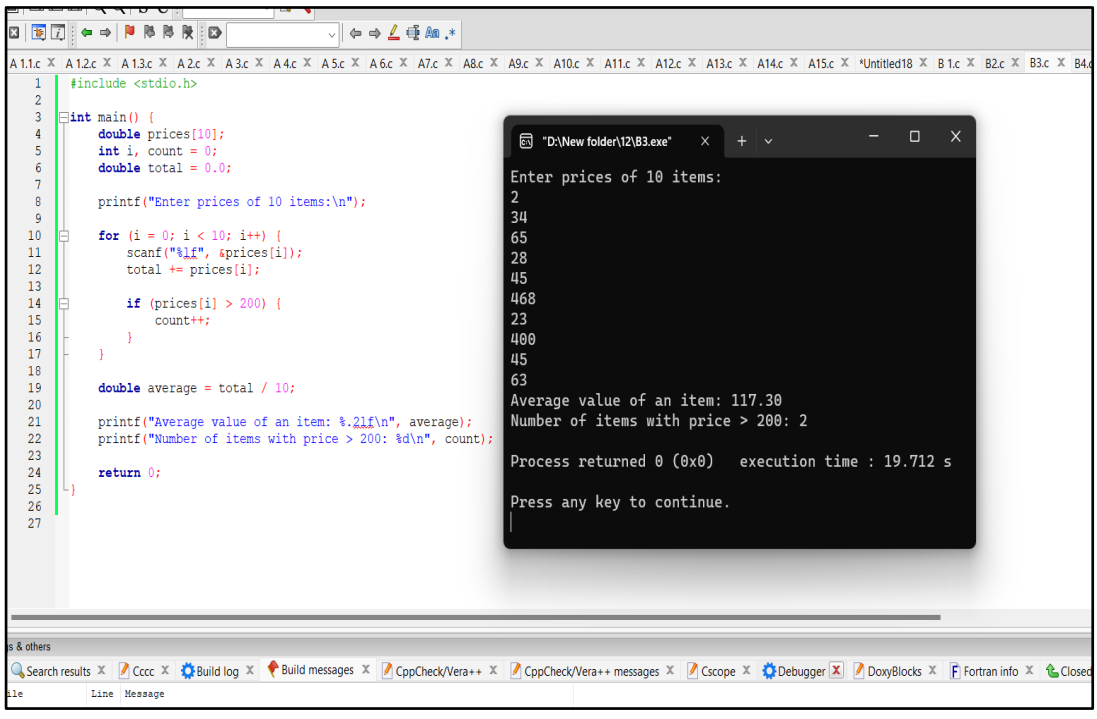
```
#include <stdio.h>
int main() {
    int marks[10];
    int i, totalMarks = 0, maxMarks, minMarks;

    printf("Enter marks of 10 students:\n");

    for (i = 0; i < 10; i++) {
        scanf("%d", &marks[i]);
        totalMarks += marks[i];

        if (i == 0) {
            maxMarks = marks[i];
            minMarks = marks[i];
        } else {
            if (marks[i] > maxMarks) {
                maxMarks = marks[i];
```

```
            }
            if (marks[i] < minMarks) {
                minMarks = marks[i];
            }
        }
    }
    double averageMarks = (double) totalMarks / 10;

    printf("Maximum Marks: %d\n", maxMarks);
    printf("Minimum Marks: %d\n", minMarks);
    printf("Average Marks: %.2lf\n", averageMarks);

    return 0;
}
```



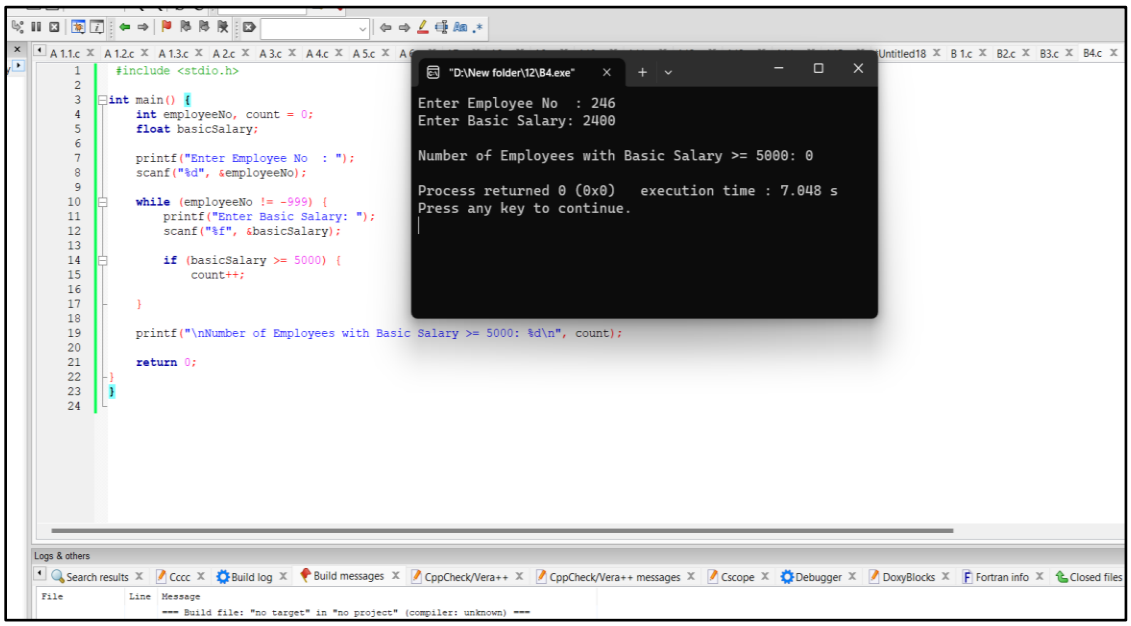
**3.**

```
#include <stdio.h>
int main() {
    double prices[10];
    int i, count = 0;
    double total = 0.0;
    printf("Enter prices of 10 items:\n");

    for (i = 0; i < 10; i++) {
        scanf("%lf", &prices[i]);
        total += prices[i];

        if (prices[i] > 200) {
            count++;
        }
    }
    double average = total / 10;

    printf("Average value of an item: %.2lf\n", average);
    printf("Number of items with price > 200: %d\n", count);

    return 0;
}
```



**4.**

```
#include <stdio.h>
int main() {
    int employeeNo, count = 0;
    float basicSalary;

    printf("Enter Employee No  : ");
    scanf("%d", &employeeNo);

    while (employeeNo != -999) {
        printf("Enter Basic Salary: ");
        scanf("%f", &basicSalary);

        if (basicSalary >= 5000) {
            count++;
    }
    printf("\nNumber of Employees with Basic Salary >= 5000: %d\n", count);

    return 0;
}
}
```



**5.**

```
 #include <stdio.h>
int main () {
   int employeeNo, count = 0, overtimeCount = 0;
   double hoursWorked, overtimePayment, totalOvertimePayment = 0.0;

   printf("Enter employee number and hours worked :\n");

   scanf("%d", &employeeNo);

   while (employeeNo != -999) {
      scanf("%lf", &hoursWorked);

      if (hoursWorked > 40) {
         overtimePayment = 150 * 40 + 200 * (hoursWorked - 40);
      } else {
         overtimePayment = 150 * hoursWorked;
      }
      printf("Employee number: %d\n", employeeNo);
      printf("Overtime payment: %.2lf\n", overtimePayment);

      totalOvertimePayment += overtimePayment;
      count++;
      if (overtimePayment > 4000) {
         overtimeCount++;
      }
      scanf("%d", &employeeNo);
   }
   double percentageExceeding4000 = (double) overtimeCount / count * 100;
```

```
    printf("\nSummary:\n");
    printf("Total employees: %d\n", count);
    printf("Total overtime payment: %.2lf\n", totalOvertimePayment);
    printf("Percentage of employees with overtime payment exceeding Rs. 4000:
%.2lf%%\n", percentageExceeding4000);

    return 0;
}
```