# International University for Science & Technology (IUST)

**College of Information Technology**

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## Assignment 1

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| **Student Name** | |
| **Year/Group** | 2009/2010 |

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|---|---|
| **Assignment title:** | **Introduction to variables** |

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|---|---|---|---|
| **Unit title:** | Computer Skills II (C Language) | **Subject Tutor:** | Mr. mhd. Mazen al-Mustafa |
| **Start:** | | **Assessor:** | |
| **Submission:** | | **Coordinator** | Mr. mhd. Mazen al-Mustafa |
| **Actual Submission date:** | | **Grading.** | |

**Learning Outcomes covered:**

- **Variables.**
- **Array Concept.**
- **Arithmetic.**
- **Assignment Operators.**
- **Increment and Decrement Operators.**
- **Input/Output in C**

**Resources:**

- C How To Program fifth Edition, by H.M. Deitel & P.J. Deitel,
- Teacher's handouts
- internet

## True/False

1. This assignment statement stores the sum of b and c in a: b + c = a;

2. The word `char` is a reserved word in C so it cannot be used as a variable name.

3. The directive
   ```
   #define FIVE 5
   ```
   notifies the C preprocessor that it is to replace each use of FIVE by 5.

4. Before a new value can be stored in a memory cell, a C program must first execute the erase function to remove the cell's old contents.

5. All values stored in memory are represented as binary strings, patterns of zeros and ones.

6. The statement
   ```
   c = d;
   ```
   checks to see if variables c and d have the same value.

7. If x is a type `double` variable and n is of type `int`, the following assignment statements are equivalent.
   ```
   x = n;
   ```
   ```
   x = (double)n;
   ```

8. If the value of x is 735, the statement
   ```
   printf("%4d", x);
   ```
   will display four blanks followed by 735.

9. The value of the expression
   ```
   x + y * z * z
   ```
   is always the same as the value of
   ```
   x + ((y * z) * z)
   ```

10. A type `char` literal is enclosed in single quotes.
11. printf() function is to obtain a value from the user

## Multiple Choice

1. The constant 0.15e+6 represents the same value as _____.

   a. 150000.0
   b. 6.15
   c. 0.75
   d. 0.21
   e. none of the above

2. What would be displayed by the following program? (The symbol '#' stands for one blank character.)

```
int main()
{
double  a, b;

   a = 37.56;
   b = 101.117;
   printf("Is it%6.1f%9.4f", a, b);
   printf("?\n");

return (0);
}
```

   a. Is#it##37.6#101.1170?\n
   b. Is#it##37.6#101.1170?
   c. Is#it##37.5#101.1170?
   d. Is#it##37.6#101.117?\n
   e. one of the above

3. If num is a variable of type int and temp is a variable of type `double`, how could you correctly complete this function call?

   scanf("%lf%d", _____);

   a. num, temp
   b. &num, &temp
   c. temp, num
   d. &temp, &num
   e. none of the above

4. Which of the following are valid identifiers?

   i. R3D3 ii. per-capita iii. phone#
   iv. ice_cream v. 92_aardvarks

   a. i, ii, iv, v
   b. i, iv
   c. i, ii
   d. ii, iv, v
   e. All are valid.

5. Which of the following declaration and initialization would correctly set the elements of array?

   a. `int` array()= {1, 2, 3, 4, 5};
   b. `int` array[]= {1, 2, 3, 4, 5};
   c. `int` array[]= 1; 2; 3; 4; 5};
   d. `int` array()= [1, 2, 3, 4, 5];
   e. `int` array()= [1;2; 3; 4; 5];

6. The programming language C was developed by _____.

   a. John von Neumann
   b. John Atanasoff
   c. Niklaus Wirth
   d. Dennis Ritchie
   e. Guy Steele

7. A _____ is a set of values and a set of operations on those values.

   a. file
   b. data type
   c. precedence rule
   d. library
   e. language standard

8. Which one of the following expressions does not evaluate to 3?

   a. 2 + 16 % 5
   b. 7 - 15 / 4
   c. 6 * 5 / 10
   d. 2 - 4 * 3 + 26 / 2
   e. 8 - 5

9. Text enclosed in /* */ in a C program _____.
   a. gives instructions to the processor
   b. declares memory requirements
   c. makes files available
   d. causes a syntax error
   e. is ignored by the C compiler

10. A C compiler detects _____.

    a. syntax errors
    b. run-time errors
    c. result errors
    d. arithmetic faults
    e. all of the above

11. A program that uses prompting messages to direct the user's input is running in _____.

    a. batch mode
    b. arithmetic/logic mode
    c. interactive mode
    d. assembly language mode
    e. memory mode

12. Which of the following is **not** a valid data type?
    a. `int`
    b. `float`
    c. `void`
    d. `char`
    e. `decimal`

13. Which of the following is wrong for comments
    a. Improve the program execution speed.
    b. The C language compiler ignores any text marked as comments.
    c. Improve the program readability.
    d. Multiple-line comments start with /* and end with */
    e. Comments can't be nested

14. Which of the following do **not** form escape sequence?
    a. \n
    b. \f
    c. \a
    d. \t
    e. \r

15. What is the purpose of the ***main()*** function?
    a. To build a user interface
    b. To hold the APIs of the application.
    c. To create buttons and scrollbars.
    d. To act as the starting point for the program
    e. To create an area to declare variables

16. Which of the following is **not** a valid rule for naming variables?
    a. Names may contain underscores
    b. Names may contain special symbols.
    c. Names may contain letters.
    d. Names may contain digits.
    e. Names must be less than 255 characters

17. Which of the following has the highest order of precedence in arithmetic expressions?
    a. Multiplication and division
    b. Addition and subtraction
    c. Parentheses
    d. modulus
    e. Operators are not significant; all calculations are evaluated from left to right.

18. which of the following is **true**:
    a. Compiler detects the logic error and corrects it.
    b. Compiler detects the syntax error but doesn't correct it.
    c. Compiler detects the logic error but doesn't correct it.
    d. Compiler detects the syntax error and corrects it.
    e. None of the above

19. What is the size of this array : char MyName[] = "good day";
    a. 6
    b. 7
    c. 8
    d. 9
    e. 10

## Short Answer

1. --------- words have special meaning in C and cannot be used to name variables.

2. In an interactive program, the statement
   printf("\n");
   has the effect of ----------.

3. The value of the expression 5 + 6.6 / 2.2 * 0.5 is ---------.

4. If the type int variable a and the type double variables b and c have values 403, 201.447, and -11.2 respectively, write a single statement that will display the following line of output (for clarity, a '#' is used to indicate one space).

   ##403#####201.45####-11.200

   ----------

5. What are the data requirements for a C program that prompts the user to enter the radius of a circle and displays the circle's circumference?

   ---------

6. Write a complete C program that prompts the user to enter the radius of a circle and displays the circumference. Be sure to name the constant P.

7. What happens to the fractional part of a type double expression when the expression is assigned to a type int variable?

8. The C statement that would store three integers keyed in by the user in the type int variables n1, n2, and n3 is ---------- .

9. An expression that has operands both of type int and of type double is called a [mixed-type] expression.

10. Unary operators have [right] associativity; binary operators have [left] associativity.

11. given Z = 9*$x^3$-x and including <math.h> ,which of the following are correct C statement to represent the same equation:
    1. 9 * pow(x,3)-x = Z ;
    2. Z = 9*(x^3)-x ;
    3. Z = 9 * pow(x,3)-x ;
    4. Z = (9 * pow(x,3))-x ;
    5. Z = 9 * (pow(x,3)-x) ;
    6. Z = 9 * pow(x,3))-x ;
    7. Z = pow(x,3)*9 -x
    8. Z =9*x*3-x;

12. find the value of each variable at every point of these quasi-programs:

| | a | b | c |
|---|---|---|---|
| `int a =0, b=0 , c ;` | | | |
| `a=3;` | | | |
| `b=4;` | | | |
| `c=a-b;` | | | |
| `a=c/a;` | | | |
| `b=b*b;` | | | |

| | X | Y |
|---|---|---|
| `int X , Y;` | | |
| `X=2;` | | |
| `Y=3*X;` | | |
| `X=Y+5;` | | |
| `Y=Y+1;` | | |

| | a | A | c |
|---|---|---|---|
| `double a ,A , c ;` | | | |
| `a=100;` | | | |
| `A=0.05;` | | | |
| `c=25;` | | | |
| `a=a+A*a;` | | | |
| `a=a-c;` | | | |
| | a | b | c |

| | | | |
|---|---|---|---|
| `int a , b , c ;` | | | |
| `a=3;` | | | |
| `b=4;` | | | |
| `c=a++;` | | | |
| `b=--a;` | | | |
| `b=a++ * ++c;` | | | |

13. find the output of the fallowing:

```
#include <stdio.h>
        int main()
        {int n = 4, k = 2;
```

| | |
|---|---|
| **printf("%d\n", ++n );** | |
| **printf("%d\n", n );** | |
| **printf("%d\n", -n );** | |
| | |
| **printf("%d\n", n );** | |
| **printf("%d\n", --n );** | |
| **printf("%d\n", n );** | |
| **printf("%d\n", n-- );** | |
| **printf("%d\n", n );** | |
| **printf("%d\n", n + k );** | |
| **printf("%d\n", n );** | |
| **printf("%d\n", k );** | |
| **printf("%d, %d\n", n,k );** | |
| **printf("%d\n", n );** | |
| **printf(" %d\n", n );** | |
| **printf("%s\n", "n" );** | |
| **printf("%d\n", n );** | |
| **printf("%s", "\n" );** | |
| **printf("%s", " n * n = " );**<br>**printf("%c", 'n' );** | |

```
        Return 0;}
```

**a.** #include "stdio.h"

```
int main()
{
  int i = 5, j = 6, k = 7, n = 3;
  printf("%d\n", i + j * k - k % n);
  printf("%d\n", i / n);
 return 0;
}
```

**b.** #include "stdio.h"

```
int main()
{
      char ch;
      char title[] = "Titanic";
      ch = title[1];
      title[3] = ch;
      printf("%s\n",title);
      printf("%c\n",ch);
}
```

14. Suppose that the following code fragment is executed.

```
#include "stdio.h"

#define size 21
int main()
{
 char message[size];
 printf("Enter a sentence on the line below.\n");
 scanf("%s", &message);
 printf("%s\n",message);
}
```

Suppose that in response to the prompt, the interactive user types the following line and presses Enter:

```
Please go away.
```

What is the output?

15. Identify and correct the syntax errors in each of the following statement (they may have more than one error)

```
int main()
 {
 char FirstName[20];
 int Salary;
 double NewSalary;
 1. print ("Enter Your Name:");
 2. scanf("%c",&FirstName);
 3. print("Enter Your Salary: ")
 4. scanf("%d",Salary);
 5. Salary + ((Salary * 10)/100)== NewSalary;
 6. printf("Name:%s\nNewSalary: %.1d "\n,FirstName,NewSalary);
```

```
return 0;}
```

16. Write a program that:
    a) Accepts Employee's Name and his basic salary.
    b) Adds 10% to the basic salary.
    c) Prints the Employee's Name with the new salary.

---

17. Write a program that prints the first letter of your name in a special font that you create. The character is printed using "*". For example **SA** will be printed as:

```
****
*
*
 ***
    *
    *
****
```

---

18. Write a program that
    d) Accepts a temperature in centigrade.
    e) Converts it to Fahrenheit.
    f) Print the result.

    Note: The formula for converting Centigrade to Fahrenheit is: F = (C * 9/5) +32

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19. Write a program that
    g) Accepts a temperature in Fahrenheit.
    h) Converts it to centigrade.
    i) Print the result.

    Note: The formula for converting Fahrenheit to centigrade is: C = (F – 32) * 5 / 9

**Student Declaration: I certify that the work contained in this assignment was researched and prepared by me:**

**Signature:** _____ **Date:** / /

**Remark:** separate feedback sheet will be returned to you after your work has been marked

## Feedback Sheet

| Student's Notes: |
| --- |
| |
| **Assistant's Feed Back:** |
| |

**Assistant:** _____

Signature: _____ Date: _____