

**Palestine Polytechnic University**  
**College of Information technology and Computer Engineering**  
**Computer and Programming Principles 5055**

**Second Exam**

Student Name: [Redacted]  
 Date: 20/11/2016  
 Time: 60 Minutes

Section: [Redacted]

الاسم

ضع اشارة بجانب اسم المدرس

- |                                       |                                    |   |   |
|---------------------------------------|------------------------------------|---|---|
| سماح البدوي <input type="checkbox"/>  | امل دويك <input type="checkbox"/>  | ازدهار جوايره <input type="checkbox"/>        | ابراهيم سراحين <input type="checkbox"/> |
| منال التديمي <input type="checkbox"/> | مازن زلوم <input type="checkbox"/> | عليان ابو غريبه <input type="checkbox"/>      | سوزان سلطان <input type="checkbox"/>    |
| <input type="checkbox"/>              | <input type="checkbox"/>           | يوسف صلاح <input checked="" type="checkbox"/> | وسام شعروخ <input type="checkbox"/>     |

Question #	1(10)	2(15)	3(10)	4(15)	Total Grade (50)
Grade					28

**Question 1: Read these sentences carefully and write **T** if the sentence is True or **F** if the sentence is False in the table below: (10 points) يرجى تعبئة الإجابات في الجدول التالي**

Question Number	1	2	3	4	5	6	7	8	9	10
Answer	F	F	F	T	F	T	F	F	T	F

-4

	Questions
T	1. Machine language uses symbols such as +, <, >, etc.....
F	2. The first stage in SDLC is called solution design because we follow logical order in writing a solution.
F	3. Compilers are used to translate low level languages (machine language) to a series of 0's and 1's.
T	4. Computer program is a collection of instructions that direct the computer to perform a specific task.
F	5. The number $(10011)_2$ is an even (زوجي) number. <i>160021 19</i>
T	6. Programming in low level languages is hard, tedious, and time consuming.
F	7. The divide and conquer method is good technique to solve problems especially the complex (معقد) ones.
T	8. Syntax errors are type of program errors that occur at run-time.
T	9. C++ is considered as a high level language.
F	10. The last step in SDLC is to test the program in the real and make maintenance.

**Question 2: Do the following operations**

**(15 points)**

a- Convert  $(10110)_8 = (100110)_{16}$

(5 points)

$$\begin{array}{r} 010 \quad 110 \\ \hline 2 \quad 6 \end{array} \quad \begin{array}{l} = 26_{10} \\ = 00100110 \\ = (100110)_{16} \end{array}$$

**4**

b- Convert  $(23)_{10} = (27)_8$

(3 points)

$$\begin{array}{r} 23 \quad 2 \quad 7 \\ \hline 2 \quad 0 \quad 2 \end{array} = (27)_8$$

$$\begin{array}{r} 8.4 \\ \hline 12.3 \\ \hline 21 \end{array}$$

c- Convert  $(AC)_{16} = (172)_{10}$

(3 points)

$$\begin{aligned} A \times 16^1 + C \times 16^0 &= 10 \times 16 + 12 \times 1 \\ &= 160 + 12 \\ &= 172 \end{aligned}$$

d- Find the 1's and 2's complement for  $(110110)_2$

(4 points)

1's Complement: ~~001001~~

2's Complement: ~~1001011~~

0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7
1000	8
1001	9
1010	A
1011	B
1100	C
1101	D

~~1001~~

~~01001  
10101  
1011~~

**Question 3:**

**(10 points)**

The following empty flowchart gives the steps to be followed while printing the count of even (زوجی) and odd (فردی) numbers between two entered values: N1, N2. Suppose that  $N1 > N2$ . The statements to be filled in the boxes are also given. Complete the flowchart by filling in the correct statement number inside each box. For example: the first statement to be put in the first box in the flowchart is 4.

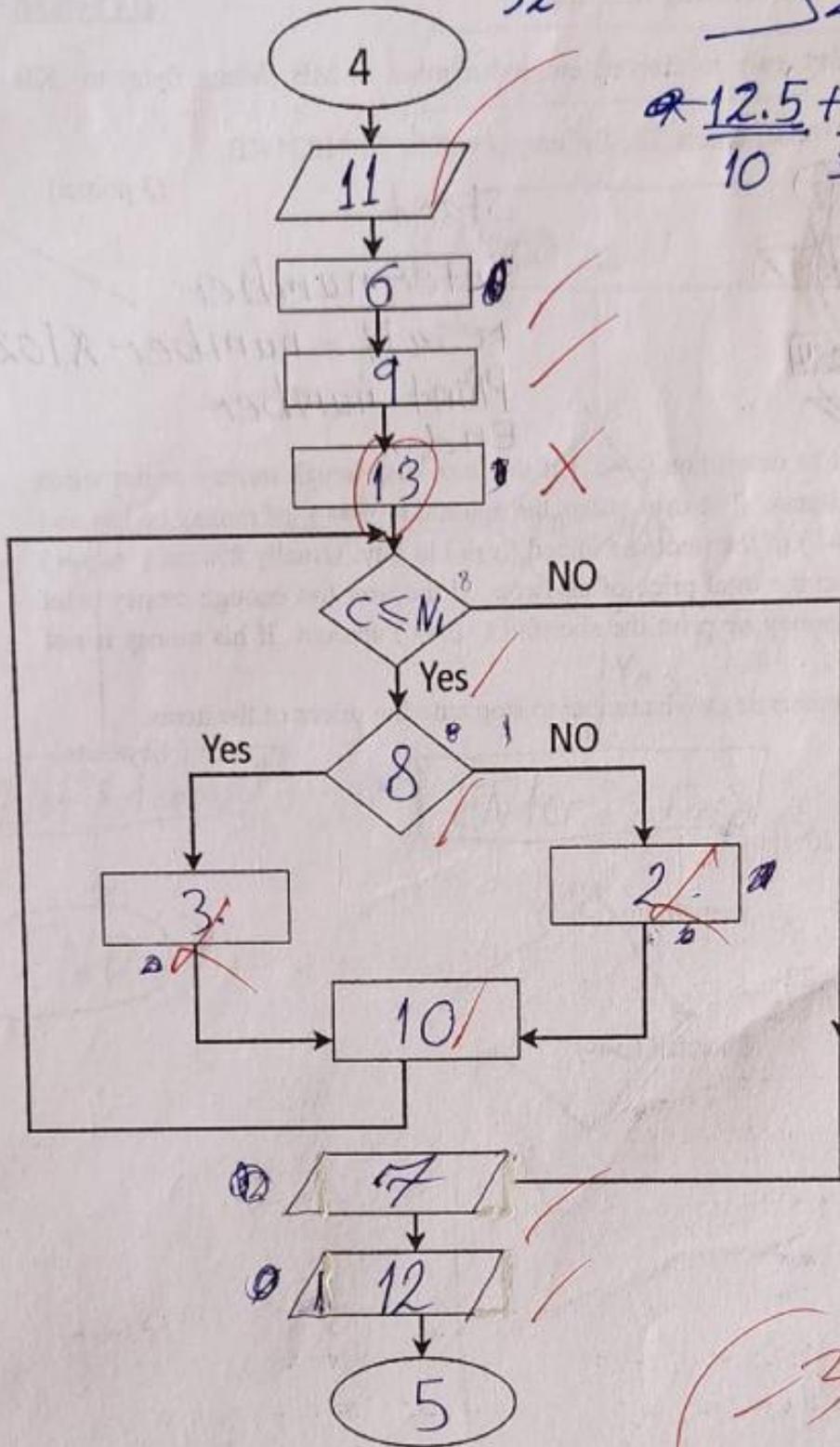
$$\begin{array}{r} 25 \\ 8.5 \\ \hline 32 \end{array}$$

$$\sqrt{28}$$

$$\frac{12.5}{10} + \frac{42}{3} + \frac{8.4}{10} = 25$$

Statements

- ~~1.  $c \leq N1$~~
- ~~2.  $c \text{ even} = c \text{ even} + 1$~~
- ~~3.  $c \text{ even} = 0$~~
- 4. Start
- 5. End
- ~~6.  $c = N2$~~
- ~~7. Print c-odd~~
- ~~8. Is c is even~~
- 9.  $c \text{ odd} = 0$
- ~~10.  $c = c + 1$~~
- 11. Enter  $N2, N1$
- ~~12. Print c-even~~
- ~~13.  $c \text{ odd} = c \text{ odd} + 1$~~



$$N_1 > N_2$$

زوجه فردي

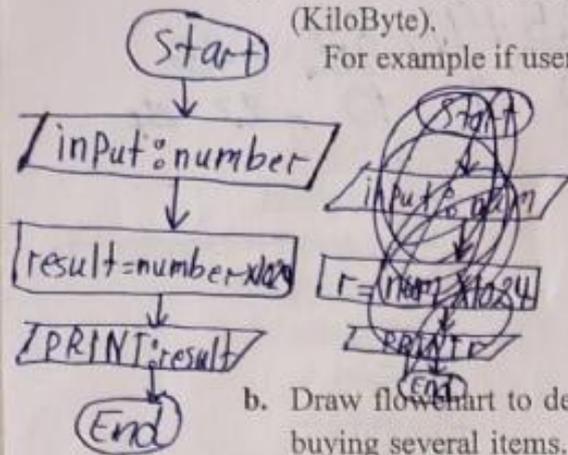
Question 4: Analysis and drawing flowchart

(14 points)

- a. Write IPO chart only to convert entered number in MB (Mega Byte) to KB (KiloByte).

For example if user enters 32 MB, output will be  $32 * 1024$  KB.

(3 points)



Start  
 Enter number  
 result = number \* 1024  
 Print number  
 End

- b. Draw flowchart to determine (يحدد) if the user has enough money or not when buying several items. The user enters the amount (مقدار) of money he has and the prices (أسعار) of the items he intend (ينوي) to buy. Usually 8% tax (ضريبه) will be added on the total price of all items. If the user has enough money print the remaining money or print the shortfall (نقص) amount if his money is not enough (كافي).

Hint: the user enters negative number to stop entering prices of the items.

(12 points)

Example 1:

Amount of money 20  
 Prices 11 4 -1  
 Output is: 3.8 Remaining (الباقي)

Example 2:

Amount of money is 22  
 Prices 5 15 2 -3  
 Output is: 1.76 Shortfall (نقص)

End of Exam