Home Work

Example 2

You have been asked to write a program that will read from the keyboard the radius of a circle and will output to the monitor the diameter, circumference, and area of the circle.

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| --- | --- | --- |
| Input | Processing | Out put |
| Radius | Compute Diameter= 2r  Compute Circumference = 2π  Compute Area of the circle = π\*r2= | diameter, circumference, and area of the circle |

Review Questions

For each of the following problems write a defining table. Then write an algorithm with numbered steps to solve the problem. Then label each step with the name of the basic computer operation that the computer will use during that step.

1. Your company needs a program to compute the amount to charge customers for mowing their lawns for an entire season. An employee will type in the total area of the customer’s lawn in square feet. Your company charges 10 cents per square foot to mow a lawn one time and will mow each lawn once a week for 15 weeks.

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| --- | --- | --- |
| Input | Processing | Out put |
| square feet | Compute area= square feet \*0.10  Compute total weeks=area\*15 | Amount of charge |

Labeling Algorithm and basic computer operation

1. Area in Square foot 🡺 Receive data (input)
2. Compute total weeks=area\*15🡺 Perform arithmetic
3. Compute area= square feet \*0.10🡺 Perform arithmetic
4. Amount of Charge 🡺 Out put

2. You have been asked to write a computer program that will output an employee’s after tax pay. Your program will read from the keyboard the number of regular hours and overtime hours that the employee worked and the employee’s regular hourly wage. The employee is paid a bonus of 1.5 times regular pay for each overtime hour worked. Tax is 15% of the employee’s gross pay.

|  |  |  |
| --- | --- | --- |
| Input | Processing | Out put |
| Regular hours  Overtime hours  Employee worked  Employee’s regular hourly wage | Compute Regular wage = Regular hour \*Regular hour wage    Compute over time wage = O.T\*(R.H(1.5))  Compute Gross Payee = Regular wage + over time wage  Compute Tax = Gross Payee \* 0.15  Compute Net pay= Gross Payee - tax | Net Pay |

Labeling Algorithm and basic computer operation

1. Regular hours 🡺 Receive data (input)
2. Overtime hours 🡺 Receive data (input)
3. Employee worked 🡺 Receive data (input)
4. Employee’s regular hourly wage 🡺 Receive data (input)
5. Compute Regular wage = Regular hour \*Regular hour wage 🡺 Perform arithmetic
6. Compute over time wage = O.T\*(R.H(1.5)) 🡺 Perform arithmetic
7. Compute Gross Payee = Regular wage + over time wage 🡺 Perform arithmetic
8. Compute Tax = Gross Payee \* 0.15 🡺 Perform arithmetic
9. Compute Net pay= .Gross Payee – tax 🡺 Out put

3. Which of the following are control structures? (Mark all that apply.)

a. input

b. computation

c. sequence 🡺

d. selection 🡺

e. repetition 🡺

f. try, catch, and throw 🡺

g. storage

h. output