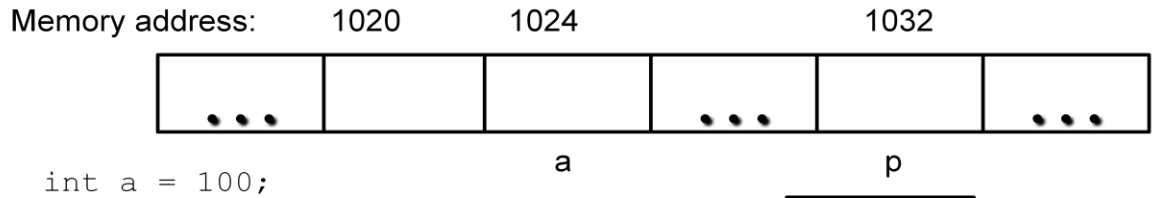
Midterm Questions Review (Fall 2019)

Question (1)

A. What is the output of the following code?

```
Void main()
{
int x=10;
int* p;
p = &x;
*p+= 20;
cout<<"Number ="<<x<<endl;
cout<<"Pointer Number = "<<*p<<endl;
}
```

B. Consider the following memory segment and program statement. What will be the values in the memory and the output of the program segment?




```
int a = 100;
int *p = &a;
cout << a << endl;
cout << &a << endl;
cout << p << " " << *p << endl;
cout << &p << endl;
```

Output:

C. What is the output of the following code?

```
int main()
{
        int a[5] = {2,4,6,8,22};
        int *p;
        p=a;
        cout << *p << " " << a[0]<<" "<<*a<<"\n";
        p++;
        cout << *p <<" "<<*a<<" "<<*(p+1);
return 0;
  }
```

Question (2)

A. Correct the errors in the following program.

```
float cube( float y);

int main()
{
int x, result;
cin>>x;
result=cube(x);
cout<<"The result is: "<<result;
return 0;
}
```

```
float cube( int y )
{
  return y*y*y;
}
```

B. The following program calculates force of an object. The formula for force says force is equal to mass (m) multiplied by speed (s). Complete the code where _____ appears.

```
_____     calcForce(_______   _____________, _________, _________________);

int main()
{
    int s;
    double m,  force;
    cout<<"Calculate the force of an object\n";
    cout << "Enter mass: ";
    cin >> m;
    cout << "Enter speed: ";
    cin >> s;

    force =_____________________________________;

    cout << "The force is: " << force;
 return 0;
}

_______ calcForce(_______   _________ , _____________ _____________) {

    _____________ result;
    result  = m * s;
return result;
}
```

C. Write a function calculatePrice that finds the price of icecream ordered by a customer. If a customer order one icecream the price is 10 Riyals. If more icecraems are ordered then all will have 50% discount.

```
double calculatePrice(int qty);
main()
 {
 int qty
double price = 0.0;

 cout << "How many icecreams? ";
 cin>>qty;
 price= calculatePrice(qty);
 cout<<"The total price of icecream is :"<<price;
 return 0;
  }
```

Write calculatePrice function here.

D. Write the definition of a function that takes as input an integer value and returns 1 if the value is even; otherwise, it returns 0.

E. Consider the following function definition:

```
double func(double x, int y, string name)
{
        //function body
}
```

Which of the following is the correct function prototype of the function func?

i. double func(); ii. double func(double x, int y, string name)
iii. double func(double, int, string); iv. func(double x, int y, string name);

F. Consider the following statements:

double num1, num2, num3;
int int1, int2, int3;
int value;
num1 = 5.0; num2 = 6.0; num3 = 3.0;
int1 = 4; int2 = 7; int3 = 8;
and the function prototype:
double cube(double a, double b, double c);

Which of the following statements are valid?
a. value = cube (num1, 15.0, num3);
b. cout << cube(num1, num3) << endl;
c. value = cube(num1, int2, num3);
d. value = cube(10.5, 20.5, 30.5);

G. Find outputs of the following program segments.

```
int mystery(int k);


      int main()
      {
      int n;
      for (n = 1; n <= 4; n++)
            cout << mystery(n); << endl;
      return 0;
      }


  int mystery(int k)
        {
        int x, y;
        y = 1;
        for (x = 1; x <= k; x++)
              y = y * x;
        return y;
```