Εντολές ελέγχου

Εργίνα Καβαλλιεράτου

Σημερινό Μάθημα

- Βρόχοι ελέγχου
  - while
  - Break
  - Continue
  - do...while
  - for
  - switch

while

```
while ( condition )
statement;
```

while – παράδειγμα/1

```
#include <iostream>
  int main()
  {
    unsigned short small;
    unsigned long  large;
    const unsigned short MAXSMALL=65535;
    cout << "Enter a small number: ";      cin >> small;
    cout << "Enter a large number: ";      cin >> large;
    cout << "small: " << small << "...";
```

while – παράδειγμα/2

```
while (small < large && large > 0 && small < MAXSMALL)
   {
      if (small % 5000 == 0)
        cout << ".";
      small++;
      large-=2;
   }
   cout << "\nSmall: " << small << " Large: " << large << endl;
   return 0;
}
```

while – παράδειγμα/1

```
#include <iostream>
  int main()   {
    unsigned short small;     unsigned long  large;
    unsigned long  skip;     unsigned long target;
    const unsigned short MAXSMALL=65535;
    cout << "Enter a small number: ";      cin >> small;
     cout << "Enter a large number: ";      cin >> large;
     cout << "Enter a skip number: ";       cin >> skip;
     cout << "Enter a target number: ";    cin >> target;
     cout << "\n";
```

while – παράδειγμα/2

```
while (small < large && large > 0 && small < 65535)     {
      small++;
      if (small % skip == 0)  {
        cout << "skipping on " << small << endl;      continue;
       }
       if (large == target)  {
        cout << "Target reached!";     break;
       }
       large-=2;
    }
    cout << "\nSmall: " << small << " Large: " << large << endl;    return 0; }
```

break/continue

```
while (condition)
{
    if (condition2)
        break;
    // statements;
}
```

```
while (condition)
{
    if (condition2)
        continue;
    // statements;
}
```

Break-Παράδειγμα

```
#include <iostream>
   int main()    {
     int counter = 0;
     while (1)      {
        counter ++;
        if (counter > 10)
            break;
     }
     cout << "Counter: " << counter << "\n";
     return 0;   }
```

do...while

```
do
   statement
while (condition);
```

do...while-Παράδειγμα

```
#include <iostream>
    int main()     {
       int counter;
       cout << "How many hellos? ";        cin >> counter;
       do        {
         cout << "Hello\n";
         counter--;
       }  while (counter >0 );
       cout << "Counter is: " << counter << endl;
       return 0;     }
```

for

```
for (initialization; test; action )
    statement;
```

for-παράδειγμα

```
#include <iostream>


 int main()
 {
     for (int i=0, j=0; i<3; i++, j++)
         cout << "i: " << i << " j: " << j << endl;
    return 0;
 }
```

for-παράδειγμα

```
#include <iostream>
   int main()    {
      int counter = 0;
      for( ; counter < 5; )      {
        counter++;
        cout << "Looping!  ";
       }
       cout << "\nCounter: " << counter << ".\n";
      return 0;
  }
```

for-παράδειγμα

```
#include <iostream.h>
    int main()    {
      int counter=0;       int max;
       cout << "How many hellos?";      cin >> max;
       for (;;)  {
         if (counter < max)  {
            cout << "Hello!\n";    counter++;
         }
         else
             break;
       }
      return 0;   }
```

for-παράδειγμα

```
#include <iostream>
    int main()
    {
       for (int i = 0; i<5; cout << "i: " << i++ << endl)
       ;
      return 0;
   }
```

for-παράδειγμα

```
#include <iostream.h>
  int main()  {
     int rows, columns;       char theChar;
     cout << "How many rows? ";       cin >> rows;
     cout << "How many columns? ";       cin >> columns;
     cout << "What character? ";       cin >> theChar;
     for (int i = 0; i<rows; i++) {
       for (int j = 0; j<columns; j++)
           cout << theChar;
       cout << "\n";
     }
    return 0;  }
```

switch

```
switch (expression)
{
case valueOne: statement;
                break;
case valueTwo: statement;
                break;
....
case valueN:   statement;
                break;
default:       statement;
}
```

switch - Παράδειγμα

```
#include <iostream.h>
int main() {
  unsigned short int number;
  cout << "Enter a number between 1 and 5: ";   cin >> number;
  switch (number)  {
     case 0:   cout << "Too small, sorry!";
               break;
     case 5:  cout << "Good job!\n";
     case 4:  cout << "Nice Pick!\n";
     case 3:  cout << "Excellent!\n";
     case 2:  cout << "Masterful!\n";
     case 1:  cout << "Incredible!\n";      break;
     default: cout << "Too large!\n";       break;   }
   return 0;  }
```

switch – Παράδειγμα/1

```
#include <iostream>
  enum BOOL { FALSE, TRUE };
  typedef unsigned short int USHORT;
  USHORT menu();
  void DoTaskOne();
  void DoTaskMany(USHORT);
  int main()    {
    BOOL exit = FALSE;
     for (;;)    {
         USHORT choice = menu();
```

switch – Παράδειγμα/2

```
switch(choice)    {
        case (1):
            DoTaskOne();   break;
        case (2):
            DoTaskMany(2);   break;
        case (3):
            DoTaskMany(3);   break;
        case (4):
            continue;    break;
        case (5):
            exit=TRUE;   break;
```

switch – Παράδειγμα/3

```
default:
cout << "Please select again!\n";
                break;
        }
        if (exit)
                break;
    }
   return 0;
}
```

switch – Παράδειγμα/4

```
USHORT menu()
  {
     USHORT choice;
     cout << " **** Menu ****\n\n";
     cout << "(1) Choice one.\n";
     cout << "(2) Choice two.\n";
     cout << "(3) Choice three.\n";
:    cout << "(4) Redisplay menu.\n";
     cout << "(5) Quit.\n\n";
     cout << ": ";       cin >> choice;
     return choice;    }
```

```
void DoTaskOne()
   {
      cout << "Task One!\n";
   }
   void DoTaskMany(USHORT which)
   {
      if (which == 2)
         cout << "Task Two!\n";
      else
         cout << "Task Three!\n";
   }
```

Κράτηση θέσεων λεωφορείων 1/10

```
#include <conio.h>
#include <cstdio>
#include <iostream>
#include <string.h>
#include <cstdlib>
using namespace std;
static int p = 0;
```

```
class a {
  char busn[5], driver[10], arrival[5], depart[5];
  char from[10], to[10], seat[8][4][10];
 public:
  void install();  void allotment();
  void empty();  void show();
  void avail();  void position(int i);
}
```

Κράτηση θέσεων λεωφορείων 2/10

```
bus[10];
void vline(char ch){
  for (int i=80;i>0;i--)
  cout<<ch;
}
```

```
void a::install(){
  cout<<"Enter bus no: ";  cin>>bus[p].busn;
  cout<<"\nEnter Driver's name: ";
  cin>>bus[p].driver;
  cout<<"\nArrival time: ";  cin>>bus[p].arrival;
  cout<<"\nDeparture: ";  cin>>bus[p].depart;
  cout<<"\nFrom: \t\t\t";  cin>>bus[p].from;
  cout<<"\nTo: \t\t\t";  cin>>bus[p].to;
  bus[p].empty();
  p++;
}
```

Κράτηση θέσεων λεωφορείων 3/10

```
void a::allotment(){
 int seat;   char number[5];
 top:
 cout<<"Bus no: ";   cin>>number;
 int n;
 for(n=0;n<=p;n++)  {
  if(strcmp(bus[n].busn, number)==0)
  break;  }
 while(n<=p)  {
  cout<<"\nSeat Number: ";
  cin>>seat;
```

Κράτηση θέσεων λεωφορείων 4/10

```
if(seat>32)    {
   cout<<"\nThere are only 32 seats available in this bus.";    }
  else    {
  if (strcmp(bus[n].seat[seat/4][(seat%4)-1], "Empty")==0)      {
     cout<<"Enter passanger's name: ";
     cin>>bus[n].seat[seat/4][(seat%4)-1];
     break;      }
  else       cout<<"The seat no. is already reserved.\n";      }
   }
  if(n>p)    {
   cout<<"Enter correct bus no.\n";      goto top;    }  }
```

Κράτηση θέσεων λεωφορείων 5/10

```
void a::empty(){
  for(int i=0; i<8;i++)  {
    for(int j=0;j<4;j++)    {
      strcpy(bus[p].seat[i][j], "Empty");    }  }}
void a::show(){
  int n;  char number[5];
  cout<<"Enter bus no: ";  cin>>number;
  for(n=0;n<=p;n++)  {
    if(strcmp(bus[n].busn, number)==0)     break;  }
  while(n<=p){
    vline('*');
```

Κράτηση θέσεων λεωφορείων 6/10

```
cout<<"Bus no: \t"<<bus[n].busn
      <<"\nDriver: \t"<<bus[n].driver<<"\t\tArrival time: \t"
      <<bus[n].arrival<<"\tDeparture time:"<<bus[n].depart
      <<"\nFrom: \t\t"<<bus[n].from<<"\t\tTo: \t\t" <<bus[n].to<<"\n";
vline('*');  bus[0].position(n);   int a=1;
for (int i=0; i<8; i++)  {
  for(int j=0;j<4;j++)    {
    a++;
    if(strcmp(bus[n].seat[i][j],"Empty")!=0)
    cout<<"\nThe seat no "<<(a-1)<<" is reserved for"
         <<bus[n].seat[i][j]<<".";   }  }
```

Κράτηση θέσεων λεωφορείων 7/10

```
break;  }
 if(n>p)
    cout<<"Enter correct bus no: ";}

void a::position(int l){
  int s=0;p=0;
  for (int i =0; i<8;i++) {
    cout<<"\n";
    for (int j = 0;j<4; j++)    {
      s++;
```

Κράτηση θέσεων λεωφορείων 8/10

```
if(strcmp(bus[l].seat[i][j], "Empty")==0)  {
    cout.width(5);
    cout.fill(' ');
    cout<<s<<".";
    cout.width(10);
    cout.fill(' ');
    cout<<bus[l].seat[i][j];
    p++;       }
```

```
      else       {
        cout.width(5);
        cout.fill(' ');
        cout<<s<<".";
        cout.width(10);
        cout.fill(' ');
        cout<<bus[l].seat[i][j];       }
      }
     }
  cout<<"\n\nThere are "<<p<<" seats empty in Bus
No:"<<bus[l].busn;
  }
```

Κράτηση θέσεων λεωφορείων 9/10

```
void a::avail(){
  for(int n=0;n<p;n++)  {
    vline('*');
    cout<<"Bus no: \t"<<bus[n].busn<<"\nDriver: \t"<<bus[n].driver
    <<"\t\tArrival time: \t"<<bus[n].arrival<<"\tDeparture Time: \t"
    <<bus[n].depart<<"\nFrom: \t\t"<<bus[n].from<<"\t\tTo: \t\t\t"
    <<bus[n].to<<"\n";
    vline('*');
    vline('_');
  }
}
```

Κράτηση θέσεων λεωφορείων 10/10

```
int main(){
system("cls");       int w;
while(1){
 cout<<"\n\n\n\n\n\t\t\t1.Install\n\t\t\t"  <<"2.Reservation\n\t\t\t"
      <<"3.Show\n\t\t\t"<<"4.Buses Available. \n\t\t\t"  <<"5.Exit";
 cout<<"\n\t\t\tEnter your choice:-> ";          cin>>w;
 switch(w)  {
  case 1:  bus[p].install();      break;
  case 2:  bus[p].allotment();    break;
  case 3:  bus[0].show();      break;
  case 4:  bus[0].avail();      break;     case 5:  exit(0);}}   return 0;}
```

Τι δεν πάει καλά;

```
int counter = 0
while (counter < 10)
{
    cout << "counter: " << counter;
}
```

Τι δεν πάει καλά;

```
for (int counter = 0; counter < 10; counter++);
    cout << counter << " ";
```

Τι δεν πάει καλά;

```
int counter = 100;
while (counter < 10)
{
    cout << "counter now: " << counter;
    counter--;
}
```

Τι δεν πάει καλά;

```
cout << "Enter a number between 0 and 5: "; cin >> theNumber;
switch (theNumber)    {
  case 0:    doZero();
  case 1:
  case 2:
  case 3:
  case 4:
  case 5:    doOneToFive();  break;
  default:
      doDefault();
      break;
}
```