

# **Türkiye'de Sezaryen Oranları Nasıl Azaltılabilir?**

**TMFTP Derneği IX. Ulusal Kongresi  
27.09.2014 Harbiye Askeri Müzesi,  
İstanbul**

**Prof. Dr. M. Sinan Beksaç**

**Perinatoloji Bilim Dalı Başkanı**

**Hacettepe Üniversitesi Tıp Fakültesi**



**Beksaç**

	<b>TOTAL DELIVERY</b>	<b>CESAREAN BIRTH RATE</b>	<b>Primary C/S Rate</b>	<b>STILLBIRTH RATE</b>	<b>Hypertensive St. of Pregnancy KH Metab. Disorders Cardiac Problems</b>
<b>1976</b>	2127	194 (9.1%)	123 (6.0%)	42/2163 (1.9 %) 38/2159 (1.7 %)	106/2127 (5.0%)
<b>1986</b>	3548	657 (18.5%)	465 (13.9%)	73/3618 (2.0%) 53/3598 (1.5%)	330/3548 (9.3%)
<b>1996</b>	1723	766 (44.5)	537 (35.9%)	41/1759 (2.3%) 20/1759 (1.1%)	222/1723 (12.9%)

# Soru'nun çağrıştırdığı soru'lar

1. İdeal C/S hızı diye bir şey varmıdır? Oran nereden nereye indirilecektir !

2. Tıbben C/S kararını veren ve hastaya teklif eden «Kadın Hastalıkları ve Doğum uzmanları» tek başlarına C/S oranlarını etkileyebilirlermi?

**CEVAP: Hayır**



# HİZMET YAPILANMASI

Hizmeti Veren

(?)

DAVRANIŞ MODELİ

DAVRANIŞ-3

*HİZMET ALANI:  $\pi \times r^2$*

$\pi$ : Tıbbi hizmet

$r$ : Sağlık politikaları

BİLGİ-1

SAĞLIK POLİTİKALARI  
&  
ALTYAPI  
(Etik-hukuki iklim &  
sosyo-ekonomik yapı)

Hizmeti

Ödeyen (?)

TUTUM-2

HİZMETİ ALAN

(Gebe)



Beksaç

**Hizmet alanını belirlemede 'tıbbi/bilimsel hizmet' ( $\pi$ ) sabit, sađlık politikaları ( $r$ ) deđişken olmalı ve hizmet alanı yapılanma ile uyumlu olmalıdır;**  
***Hizmet alanının «davranış modeli» ile uyumlu olması için hizmete uygun sađlık politikaları geliştirilmelidir.***

- Verilen «Tıbbi hizmete» uygun sađlık politikaları geliştirilir ve düzenlemeler (uygulamalar) yapılırsa C/S oranları tıbben olması gereken düzeylere iner.
- Mevcut durum, tıbbi hizmetin «sađlık politikalarına» uygun düzenlenmeye çalışılmasından kaynaklanmaktadır.



# TÜRKİYEDE HİZMET YAPILANMASI

Hizmeti Veren  
(?)

EYLEM ALANI

SAĞLIK POLİTİKALARI  
&  
ALTYAPI  
(Etik-hukuki iklim &  
sosyo-ekonomik  
yapı)

BİLGİ-1

Hizmeti  
Ödeyen (?)

TUTUM-2

HİZMETİ ALAN  
(Gebe)



Beksaç

# HİZMET YAPILANMASI (BİRİNCİ BASAMAK)

Hizmeti Veren

(?)

DAVRANIŞ-3

BİLGİ-1

SAĞLIK POLİTİKALARI  
&  
ALTYAPI  
(Mediko-legal iklim &  
sosyo-ekonomik yapı)

HİZMET ALANI

Hizmeti  
Ödeyen

TUTUM-2

HİZMETİ ALAN  
(Gebe)

Beksaç

# Bugünkü kořullarda Türkiye'de C/S oranları azaltılmalı mı?

- ☯ C/S oranlarında yıllar içinde artma olmuřtur ama *maternal ve perinatal* «mortalite ve morbidite'de» azalma gerekleřmiřtir.
- ☯ Mevcut durum, tıbbi hizmetin bařarılı olması için řartlara uyum göstermesinden mi kaynaklanmaktadır?



**Dođum hekimliğinde amaç; Anne sađlık ve konforunu gözetererek sađlıklı bebeklerin eve gönderilmesidir.**

**«Optimal Sezaryen» hızı diye bir şey varmıdır??**



*Rosen MG: Premature Concerns for Cesarean Sections? JAMA 1984; 252: 3295*



*Beksac MS: Dilemma about cesarean section rate. GORM 2014; 21:234*



**Beksaç**

**ABD'de sezaryen hızı 1970-1978 yılları arasında %5.5 dan %15.2 ye çıkmış ve 1988 yılında %24.7 ile zirve yapmıştır.**

**2000'li yıllara kadar %23 ler civarında seyreden oran 2000'li yılların ikinci yarısından sonra artmaya ve ortamsal deęişkenlikler göstermeye başlamıştır**

**Günümüzde eyaletler ve kurumlar arasında farklılıklar vardır ve artan sezaryen oranlarından bahsedilmektedir.**



# DEĐİŐİM FAKTÖRÜ

- Hasta profili. Gebelik yaşında artış ve beklentiler....
- Sosyal yapı. Deđişen etik deđerler ve hukuki iklim...
- Ekonomik deđerler, sigorta sistemi...
- Altyapı
- C/S endikasyonları
- Eđitim
- Diđer



# Buna rağmen C/S oranı azaltılabilir mi?

## GEÇİCİ

1. «Antenatal bakım ve doğum» birinci basamak sağlık hizmetleri çerçevesince ele alınır!!! →Politik karar ?
2. Kararların sorumluluğu başka unsurlara yüklenerek hizmet yapılanmasına gidilir Komputerize sistem ve yapay zekalar

## KALICI

1. Hizmet yapılanması içindeki tüm unsurlar karar verme-davranış ekseninde hareket ederler ve buna uygun sağlık politikaları geliştirilir
2. Hizmeti alanın bilinçlendirilmesi ve eğitim



# ADANA SYSTEM

**Name Surname**

**Address**

**File No**

**CLICK FOR PREDICTION (After Data Entry)**

**Age**

**Gravida**

**Para**

**Gestation. week**

**Presentation**

- Vertex
- Breech
- Transverse
- Others

**Induction**

Medical  Surgical

**Medical Status**

- Normal
- Maternal conditions affecting maternal and fetal health
- Uterine problems
- Labor problems
- Placental problems
- Fetal problems

- 102 Normal Pregnancies ; Undesirable conditions may exist
- 108 Normal ; Relatives
- 109 Normal ; Poor obstetrical history

**Note: Do not click if the pregnancy is ideal normal**

My Computer

Network Neighborhood

Microsoft Outlook

Recycle Bin

Internet Explorer

My Briefcase

activity

Office

Office

Microsoft

## ADANA SYSTEM

Name Surname

asli ay

Address

atac sk 67

File No

3478654

CLICK FOR PREDICTION (After Data Entry)

## Medical Status

- Normal
- Maternal conditions affecting maternal and fetal health
- Uterine problems
- Labor problems
- Placental problems
- Fetal problems

Age

Gravida

Para

Gestation.  
week

## Presentation

- Vertex
- Breech
- Transverse
- Others

## Induction

- Medical
- Surgical

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Office Office

Microsoft

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- Labor problems
- Placental problems
- Fetal problems

Age

39

Gravida

Para

Gestation.  
week

## Presentation

- Vertex
- Breech
- Transverse
- Others

## Induction

- Medical
- Surgical

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Office



Microsoft

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asli ay

Address

atac sk 67

File No

3478654

CLICK FOR PREDICTION (After Data Entry)

## Medical Status

- Normal
- Maternal conditions affecting maternal and fetal health
- Uterine problems
- Labor problems
- Placental problems
- Fetal problems

Age

39

Gravida

1

Para

0

Gestation.  
week

## Presentation

- Vertex
- Breech
- Transverse
- Others

## Induction

- Medical
- Surgical

- 102 Normal Pregnancies ;  
Undesirable conditions may exist
- 108 Normal ; Relatives
- 109 Normal ; Poor obstetrical history

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Office Office

Microsoft

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Name Surname

asli ay

Address

atac sk 67

File No

3478654

CLICK FOR PREDICTION (After Data Entry)

## Medical Status

- Normal
- Maternal conditions affecting maternal and fetal health
- Uterine problems
- Labor problems
- Placental problems
- Fetal problems

Age

39

Gravida

1

Para

0

Gestation.  
week

32

## Presentation

- Vertex
- Breech
- Transverse
- Others

## Induction

- Medical
- Surgical

- 102 Normal Pregnancies ; Undesirable conditions may exist
- 108 Normal ; Relatives
- 109 Normal ; Poor obstetrical history

Note: Do not click if the pregnancy is ideal normal

Office

Office



Microsoft

## ADANA SYSTEM

Name Surname

asli ay

Address

atac sk 67

File No

3478654

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## Medical Status

- Normal
- Maternal conditions affecting maternal and fetal health
- Uterine problems
- Labor problems
- Placental problems
- Fetal problems

Age

39

Gravida

1

Para

0

Gestation.  
week

32

## Presentation

- Vertex
- Breech
- Transverse
- Others

## Induction

- Medical
- Surgical

- 102 Normal Pregnancies ;  
Undesirable conditions may exist
- 108 Normal ; Relatives
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Note: Do not click if the pregnancy  
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Office Office

Microsoft

## ADANA SYSTEM

Name Surname

asli ay

Address

atac sk 67

File No

3478654

CLICK FOR PREDICTION (After Data Entry)

## Medical Status

- Normal
- Maternal conditions affecting maternal and fetal health
- Uterine problems
- Labor problems
- Placental problems
- Fetal problems

Age

39

Gravida

1

Para

0

Gestation.  
week

32

## Presentation

- Vertex
- Breech
- Transverse
- Others

## Induction

- Medical
- Surgical

- 200 Chronic hypertension
- 201 Pregnancy induced hypertension (PIH) = mild/moderate preeclampsia
- 202 Severe preeclampsia
- 203 Eclampsia
- 204 PIH superimposed chronic HT.
- 205 Renal disease



Office



Microsoft



- 1
- 2
- 3
- 4
- 5
- 6
- 7

## ADANA SYSTEM

### ADANA SYSTEM

**PREDICTION**

**CESAREAN SECTION**

Name

Address

File

CLICK

Age Gravida Para Gestation.  
week 

## Presentation

- Vertex
- Breech
- Transverse
- Others

## Induction

- Medical
  Surgical

## Medical Status

- Normal
- Maternal conditions affecting maternal and fetal health
- Uterine problems
- Labor problems
- Placental problems
- Fetal problems

- 200 Chronic hypertension
- 201 Pregnancy induced hypertension (PIH) = mild/moderate preeclampsia
- 202 Severe preeclampsia
- 203 Eclampsia
- 204 PIH superimposed chronic HT.
- 205 Renal disease



Draw

Sli

**Sezaryen uygulaması «Maternal & Perinatal morbidite ve mortaliteyi kontrol altına almak içindir**

*İdeal sezaryen hızı mekan ve zamana göre değişebilir*

# PERINATAL MEDICINE 2015

**TMFTP & SEESPM**

**23-25 Nisan 2015**

**Cevahir Oteli Kongre Merkezi  
İstanbul**

**[www.perinatalmedicine2015](http://www.perinatalmedicine2015)**



**Beksaç**

***THERE IS A SERIOUS DEBATE ON  
THE FACTORS THAT INFLUENCE  
THE ROUTE OF DELIVERY AND  
C/S INDICATIONS***



# CESAREAN INDICATIONS

- Repeat
- Elective
- Fetal Distress
- Dystocia  
(CPD, Malpresentations, Inertia, etc.)
- Maternal Factors / Others



# FACTORS THAT INFLUENCE THE ROUTE OF DELIVERY

- Maternal Age
- Parity
- Gestational Week
- Socioeconomic Differences
- Source of Payment
- Type of Care
- Physician Factor
- Medico-Legal Climate



**Decision-Making processes  
need careful modeling,  
especially when the medical  
information is incomplete,  
imprecise, and possibly  
inconsistent**



**What happens if there is  
misunderstanding inbetween the  
payer-server-consumer relationships**

**Chaos and fuzzy legal climate**

**All physicians need is self protection**



**Beksaç**

# CESAREAN INDICATIONS

	1976 (9.1%)	1986 (18.5%)	1996 (44.5%)
	n (%)	n (%)	n (%)
<b>Repeat</b>	71 (36.6)	192 (29.2)	229 (29.9)
<b>Elective</b>	14 (7.2)	26 (4.0)	69 (9.0)
<b>Fetal Distress</b>	34 (17.5)	100 (15.2)	96 (12.5)
<b>Dystosia</b>	61 (31.3)	282 (42.9)	248 (32.1)
<b>Others</b>	14 (7.2)	57 (8.6)	124 (16.2)
<b>TOTAL</b>	194	657	766

# **A BACKPROPAGATION LEARNING ALGORITHM**

**Supervised Artificial Neural Network**



**Beksaç**

# THE SYSTEM IS TRAINED & TESTED BY THE DATA OF 7398 PREGNANCIES

1976



2127

1986



3548

1996



1723

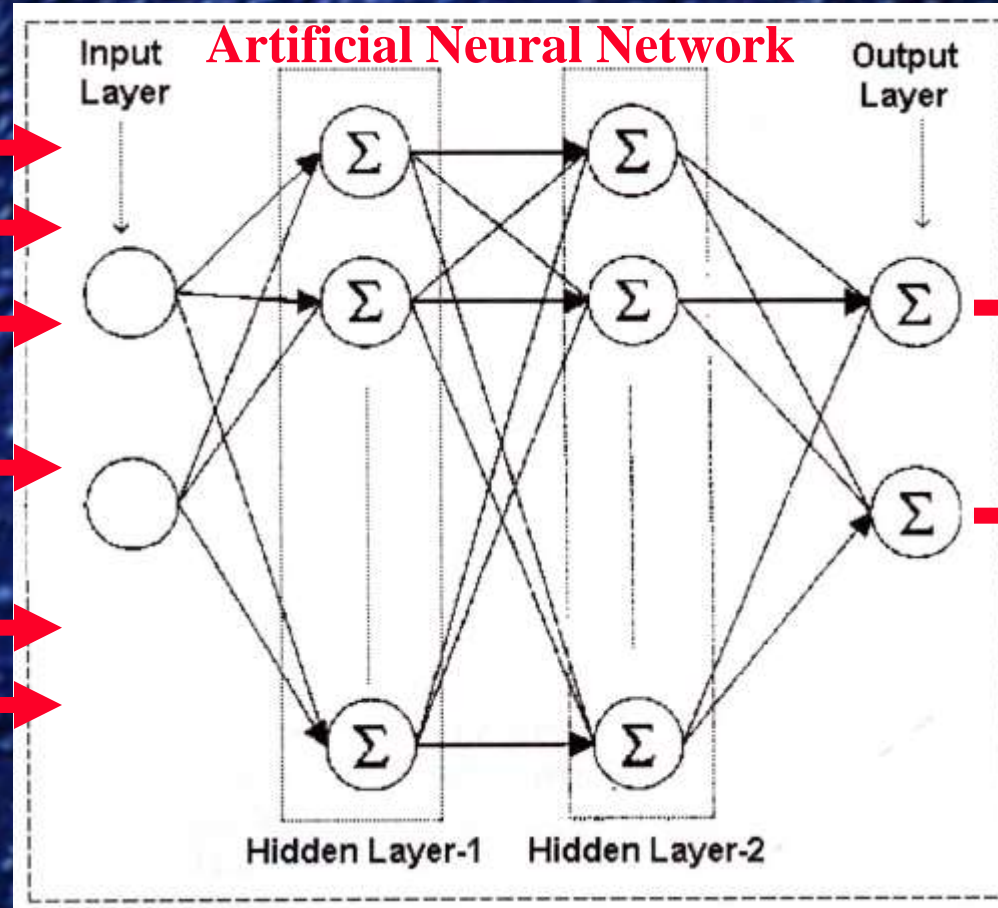


# INPUT

# OUTPUT

DESICION MAKING

1. Maternal Age
2. Gravida, Para
3. Gestational Age
4. Necessity of Labor Ind.
5. Presentation
6. Maternal Health Problems and/or Risk Factors



1. Vaginal Delivery
2. Cesarean Section

**Learning Algorithm**



**Beksaç**

# **INPUT FEATURES FOR THE ARTIFICIAL NEURAL NETWORK (Backpropagation Learning Algorithm)**

- 1. Maternal Age**
- 2. Gravida, Para**
- 3. Gestational Age**
- 4. Necessity of Labor Induction (yes, no)**
- 5. Presentation (vertex, breech, transvers, etc.)**
- 6. Maternal Health Problems and/or Risk Factors**



# **TESTING “ADANA SYSTEM” Version 1.0**

**The programme is tested by the data of**

- 1) 2489 Vaginal Delivery**
- 2) 458 Cesarean Section patients**



# THE PREDICTIVE VALUES OF ADANA SYSTEM (Version 1.0)

<b>Specificity</b>	<b>97.5%</b>
<b>Sensitivity</b>	<b>60.9%</b>
<b>False Positive Rate</b>	<b>2.5%</b>
<b>False Negative Rate</b>	<b>39.1%</b>
<b>PPV</b>	<b>81.8%</b>
<b>NPV</b>	<b>93.1%</b>
<b>Test Efficiency</b>	<b>91.8%</b>
<b>Prevalance</b>	<b>15.5%</b>



# ADANA SYSTEM

Name Surname

Address

File No

CLICK FOR PREDICTION (After Data Entry)

Age

Gravida

Para

Gestation. week

**Presentation**

- Vertex
- Breech
- Transverse
- Others

**Induction**

Medical  Surgical

**Medical Status**

- Normal
- Maternal conditions affecting maternal and fetal health
- Uterine problems
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- 102 Normal Pregnancies ; Undesirable conditions may exist
- 108 Normal ; Relatives
- 109 Normal ; Poor obstetrical history

Note: Do not click if the pregnancy is ideal normal

Microsoft Office  
File Edit  
1  
Draw

# ADANA SYSTEM

Name Surname: gul okan  
Address: icel sk 20=4  
File No: 4321987

CLICK FOR PREDICTION (After Data Entry)

**Medical Status**

- Normal
- Maternal conditions affecting maternal and fetal health
- Uterine problems
- Labor problems
- Placental problems
- Fetal problems

Age:   
Gravida:   
Para:   
Gestation. week:

**Presentation**

- Vertex
- Breech
- Transverse
- Others

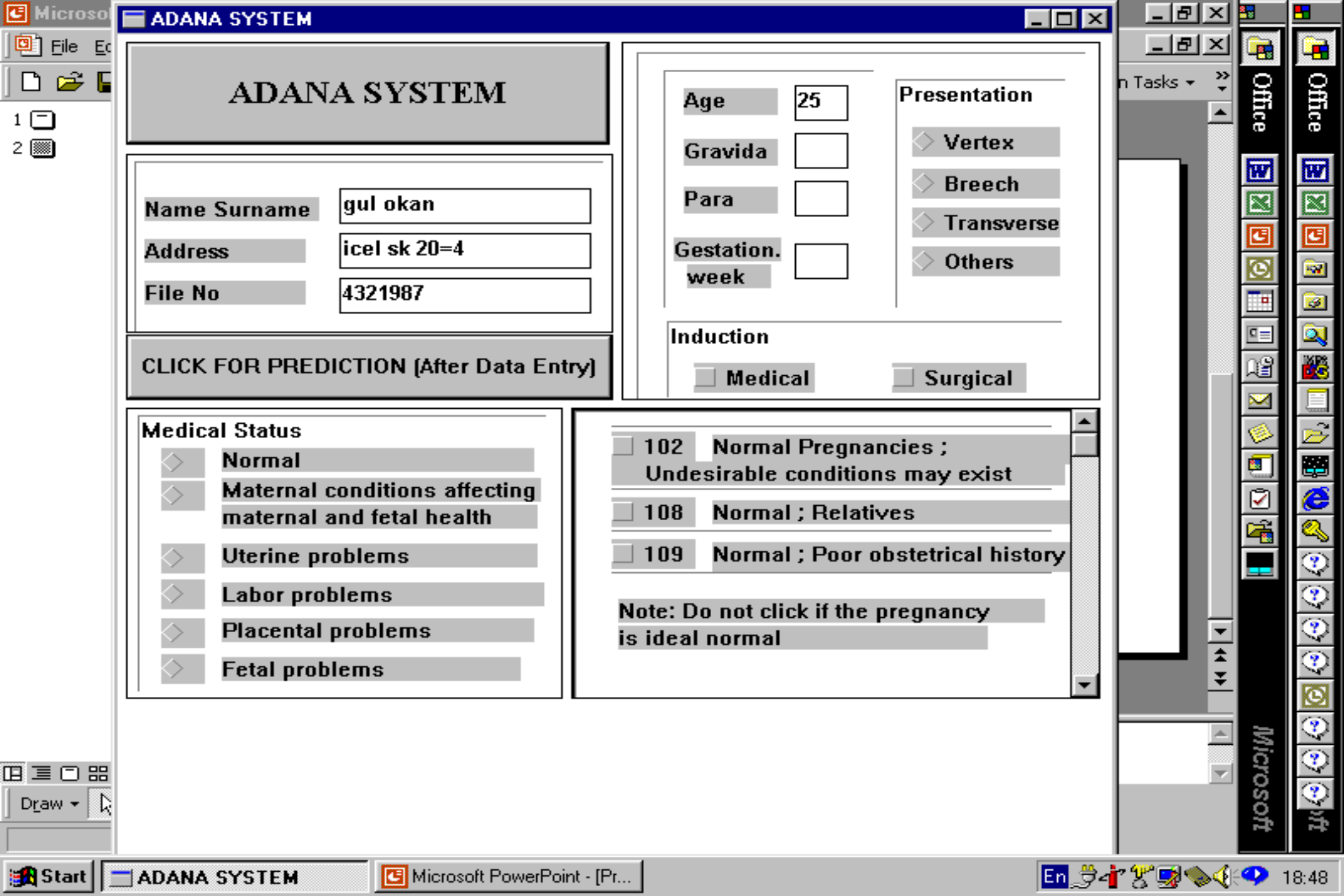
**Induction**

Medical       Surgical

- 102 Normal Pregnancies ; Undesirable conditions may exist
- 108 Normal ; Relatives
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Note: Do not click if the pregnancy is ideal normal

Office  
Office  
Microsoft



# ADANA SYSTEM

**Name Surname**

**Address**

**File No**

**Age**

**Gravida**

**Para**

**Gestation. week**

**Presentation**

Vertex

Breech

Transverse

Others

**Induction**

Medical  Surgical

CLICK FOR PREDICTION (After Data Entry)

**Medical Status**

Normal

Maternal conditions affecting maternal and fetal health

Uterine problems

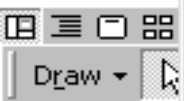
Labor problems

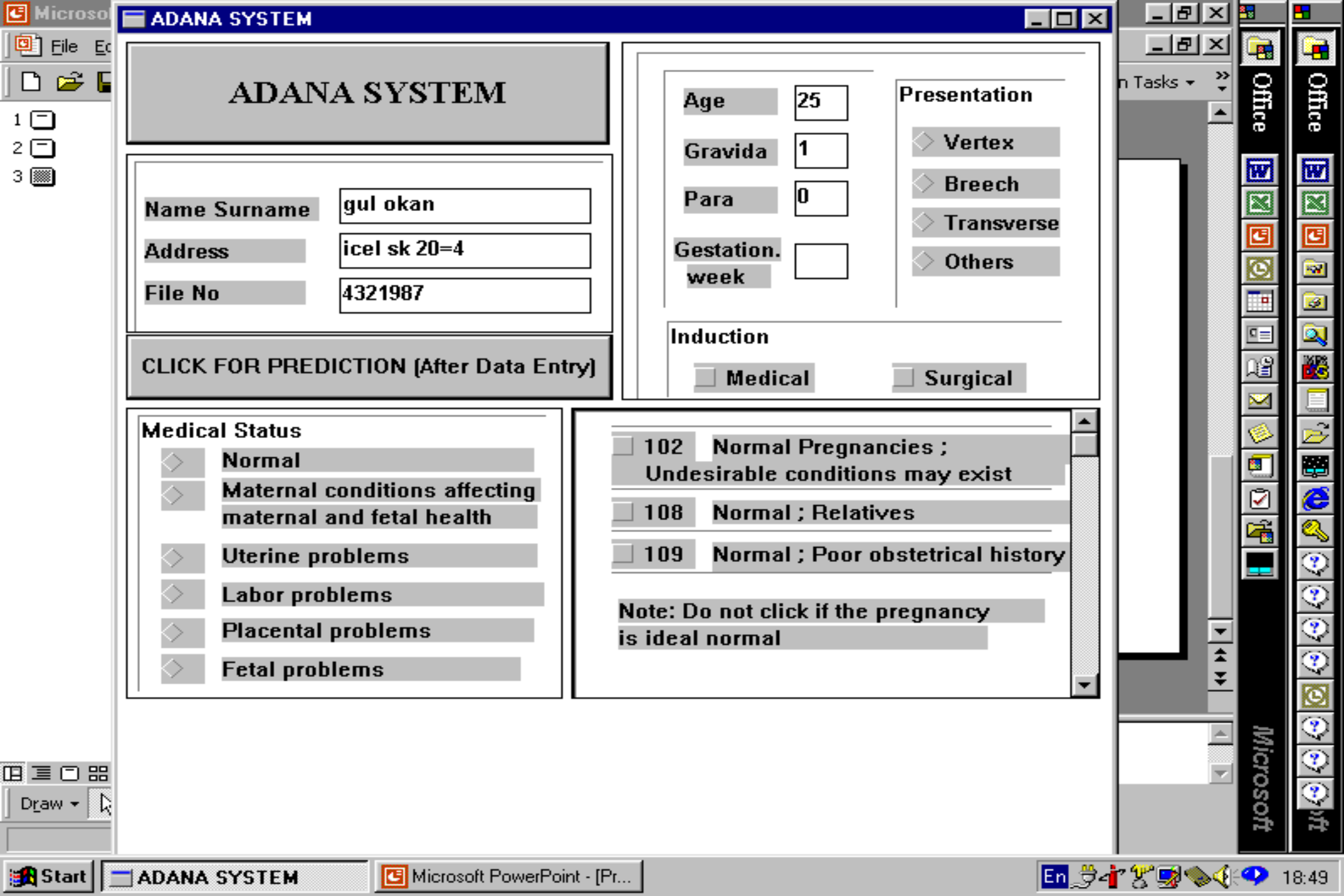
Placental problems

Fetal problems

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# ADANA SYSTEM

**Name Surname**

**Address**

**File No**

**CLICK FOR PREDICTION (After Data Entry)**

### Medical Status

- Normal
- Maternal conditions affecting maternal and fetal health
- Uterine problems
- Labor problems
- Placental problems
- Fetal problems

**Age**

**Gravida**

**Para**

**Gestation. week**

### Presentation

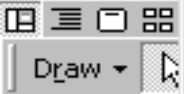
- Vertex
- Breech
- Transverse
- Others

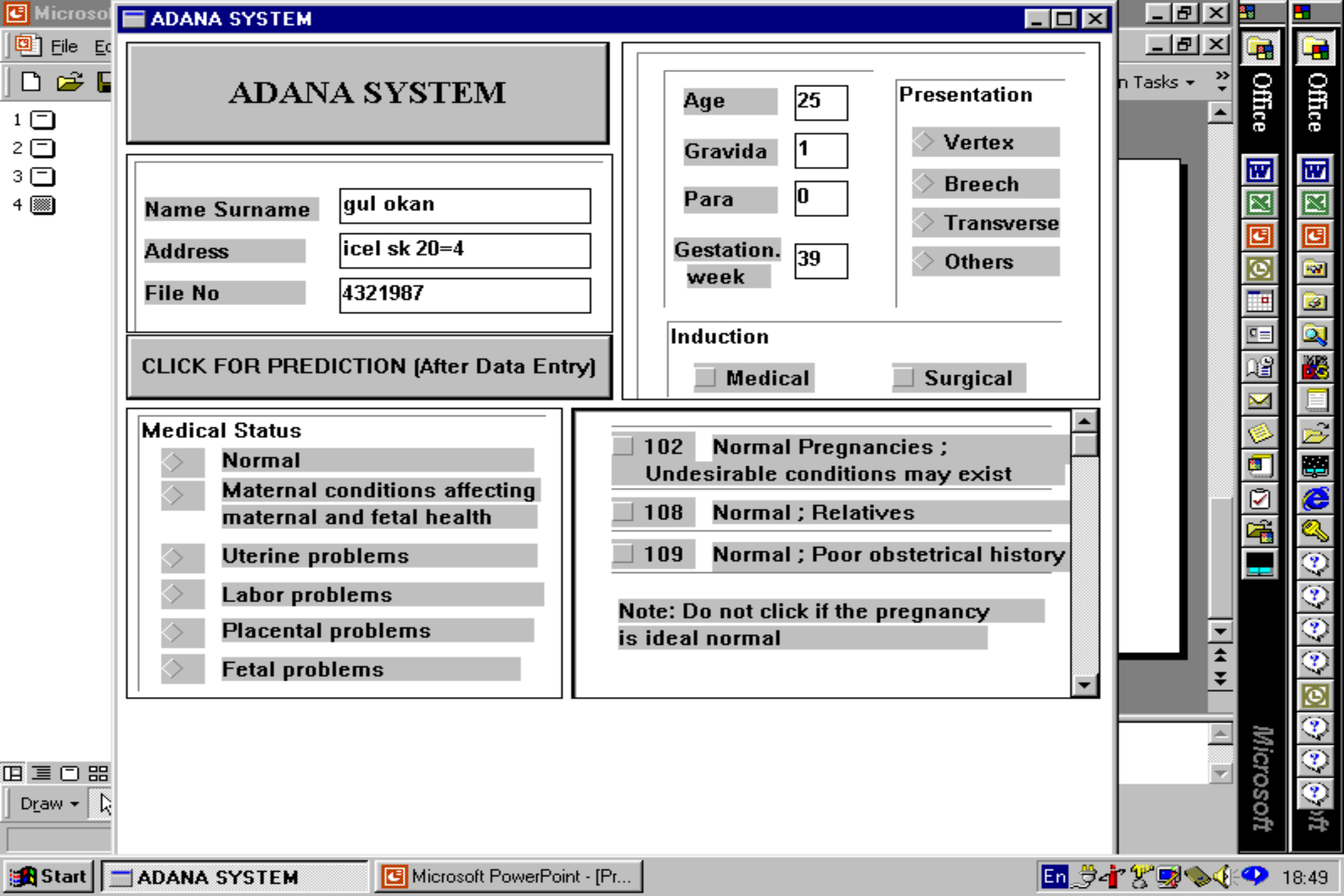
### Induction

- Medical
- Surgical

- 102 Normal Pregnancies ; Undesirable conditions may exist
- 108 Normal ; Relatives
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**Note: Do not click if the pregnancy is ideal normal**





# ADANA SYSTEM

**Name Surname**

**Address**

**File No**

CLICK FOR PREDICTION (After Data Entry)

**Age**

**Gravida**

**Para**

**Gestation. week**

**Presentation**

- Vertex
- Breech
- Transverse
- Others

**Induction**

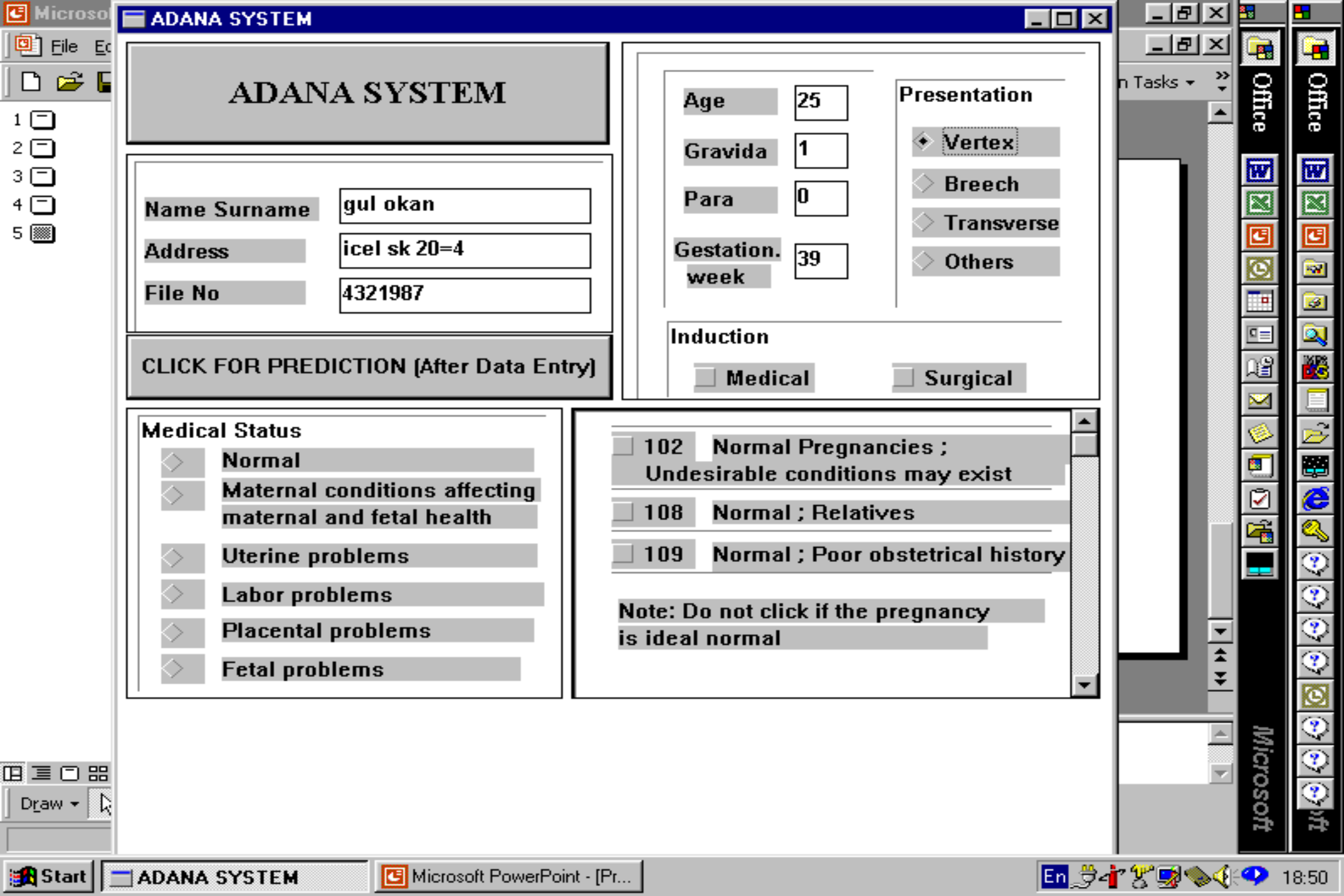
Medical  Surgical

**Medical Status**

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  - 109 Normal ; Poor obstetrical history
- Note: Do not click if the pregnancy is ideal normal**

Draw



# ADANA SYSTEM

**Name Surname**

**Address**

**File No**

**CLICK FOR PREDICTION (After Data Entry)**

- Medical Status**
- Normal
  - Maternal conditions affecting maternal and fetal health
  - Uterine problems
  - Labor problems
  - Placental problems
  - Fetal problems

**Age**

**Gravida**

**Para**

**Gestation. week**

**Presentation**

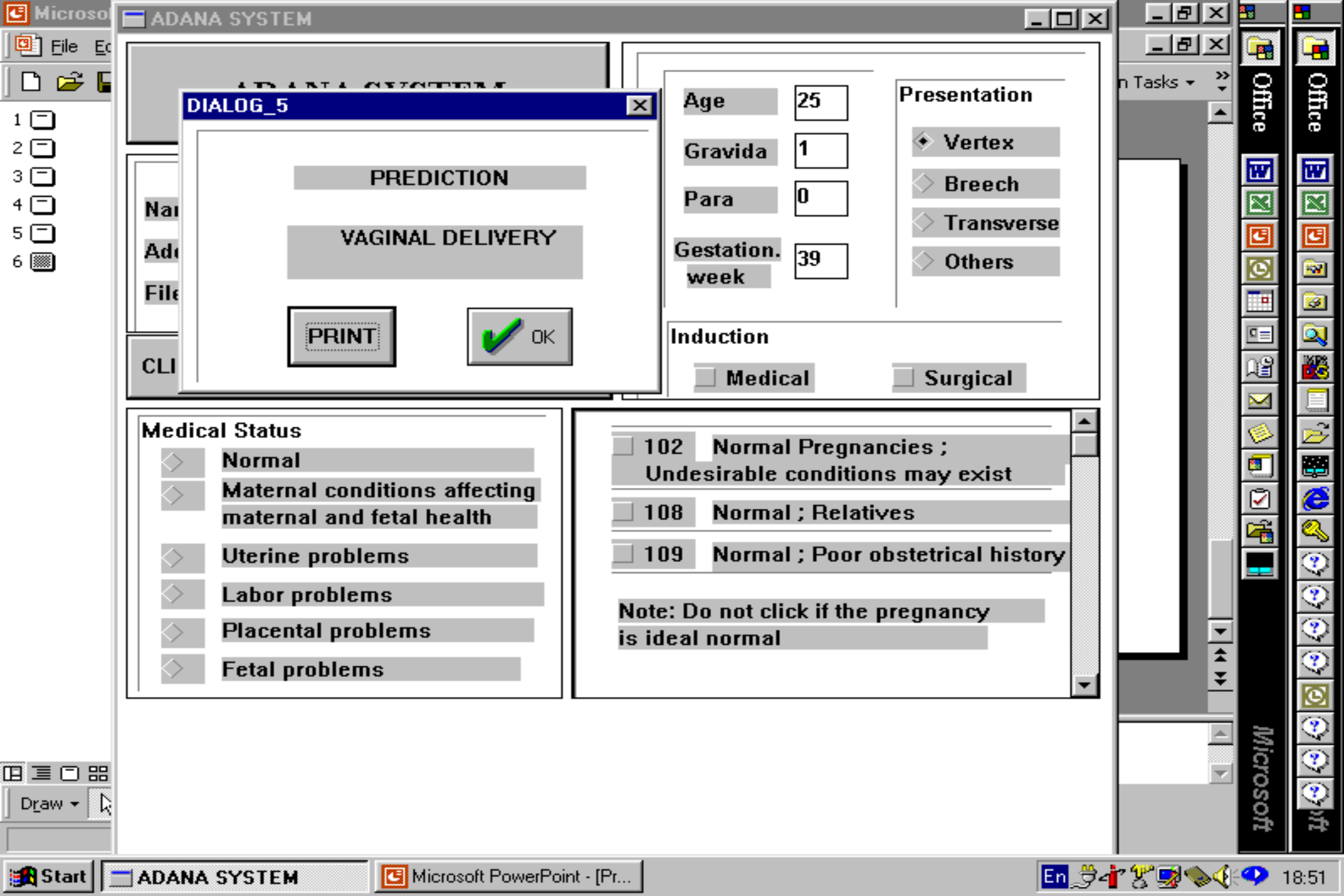
- Vertex
- Breech
- Transverse
- Others

**Induction**

Medical  Surgical

- 102 Normal Pregnancies ; Undesirable conditions may exist
  - 108 Normal ; Relatives
  - 109 Normal ; Poor obstetrical history
- Note: Do not click if the pregnancy is ideal normal**

Draw ▾



DIALOG\_5

PREDICTION

VAGINAL DELIVERY

PRINT

OK

Age 25

Gravida 1

Para 0

Gestation. week 39

Presentation

- Vertex
- Breech
- Transverse
- Others

Induction

- Medical
- Surgical

Medical Status

- Normal
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- Uterine problems
- Labor problems
- Placental problems
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